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FM 9-10

DEPARTMENT OF THE ARMY FIELD MANUAL

RECORDED
ORDNANCE MAINTENANCE
AND
GENERAL SUPPLY
IN THE FIELD

DEPARTMENT OF THE ARMY

AUGUST 1951

**DEPARTMENT OF THE ARMY FIELD MANUAL
FM 9-10**

This manual supersedes FM 9-10, 20 April 1942, including C1, 28 August 1943; C2, 30 March 1944; C3, 15 April 1944; C4, 21 June 1944; C5, 27 June 1944; and C6, 16 October 1944; and FM 9-25, 3 September 1942, including C1, 18 February 1944.

**ORDNANCE
MAINTENANCE
AND
GENERAL SUPPLY
IN THE FIELD**



DEPARTMENT OF THE ARMY

• AUGUST 1951

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PART ONE

GENERAL

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. PURPOSE

This manual is a guide for personnel concerned with the logistics of ordnance maintenance and general supply in the field. It deals with the organization, management, and operations of ordnance maintenance and general supply. This manual is one of four related manuals on the subject of ordnance service in the field. For information on the general subject of ordnance service, refer to FM 9-5. The supply of army ordnance ammunition is presented in FM 9-6. Information on the reconnaissance and disposal of explosive ordnance is contained in FM 9-40.

2. IMPORTANCE

The importance of ordnance maintenance and general supply in the field cannot be overemphasized. The potential fire power and mobility of an army in the field is measured by the state of operative readiness of its ordnance equipment. Well organized, adequately managed, and efficiently operated ordnance maintenance and general supply units insure the constant readiness of ordnance equipment, and are therefore essential elements of armies, independent corps, divisions, task forces, and logistical commands.

3. ORDNANCE SERVICE IN THE FIELD

The Ordnance Corps is organized along functional lines to design, develop, produce, procure, store, maintain, and distribute ordnance matériel, and to train technically qualified ordnance specialists for service in the field. The technical services of the Ordnance Corps are extended to the army in the field by ordnance staff officers and by ordnance units.

4. ORDNANCE STAFF

a. Each commanding officer, whose command includes ordnance maintenance and general supply units, is responsible for the execution of ordnance maintenance and general supply service within that command. An ordnance staff is provided to advise and assist the commander in the discharge of this responsibility. The senior ordnance staff officer is designated as the ordnance officer of the command, and normally exercises, in the name of the commander, operational control of ordnance service within the command.

b. Operational control is the authority delegated by the commander to the ordnance officer, whereby the latter is authorized to direct the tactical, technical, and service operations of ordnance units assigned or attached to the command by means of plans, policies, and directives issued in the name of the commander.

c. The ordnance officers of infantry, airborne, and armored divisions, and of amphibious support brigades command the ordnance units organic to those commands and have operational control of any other ordnance units that may be attached from time to time. The commanders of ordnance groups and battalions command the ordnance units attached to their units.

d. When no ordnance staff officer is provided in the headquarters of a command, the senior ordnance unit commander will act as the ordnance staff officer, in addition to his duties as unit commander.

5. ORDNANCE UNITS

The complexity of ordnance maintenance and supply in the field requires a variety of ordnance units. Flexibility is obtained by employing ordnance companies; each organized, trained, and equipped to accomplish a part of the ordnance mission. Appropriate types of ordnance companies are attached to ordnance battalion headquarters, and ordnance battalions are in turn attached to ordnance group headquarters to make up ordnance battalions and ordnance groups of flexible composition which are capable of supporting the combinations of ordnance equipment that may be encountered in any part of a theater of operations. Ordnance battalions of fixed composition are organized for service with armored divisions and for employment in depot maintenance installations of the communications zone. Ordnance cellular type units of less than company size are organized to accomplish specialized missions that can be performed by a relatively small group of individuals attached to a larger ordnance unit.

6. MAINTENANCE CATEGORIES

Maintenance operations as outlined in AR 750-5 are classified into categories according to the frequency, magnitude, and degree of tech-

nical skill required; and jobs are allocated to using organizations and to technical service organizations in accordance with the availability of skilled personnel, tools and equipment, supplies, and time available within the organization. The specific categories are organizational maintenance, field maintenance, and depot maintenance. Maintenance operations performed within each category are as follows:

a. Organizational Maintenance. Organizational maintenance is that work authorized to be performed by operators or by crews assigned to operate a major item of ordnance equipment, and by specially trained mechanics within the using organization. The scope of organizational maintenance on ordnance equipment is fully described in the appropriate technical manuals of the 9-200 to 9-999 series and in field manuals of the 23 series. In the Department of the Army, organizational maintenance normally incorporates the first and second echelons of maintenance. The first echelon of maintenance includes the service performed by the operator or the crew before, during, and after operations. This includes proper care, use, cleaning, operation, preservation, servicing, and daily and weekly inspections. The second echelon of maintenance is accomplished by specially trained mechanics within the using organization and includes the performance of periodic inspections and scheduled services, replacement of authorized parts and minor assemblies, and adjustments that can be made with tools authorized the organization.

b. Field Maintenance. This category incorporates the third and fourth echelons of maintenance and is the work performed by mobile and semimobile ordnance maintenance units and by post ordnance shops on ordnance equipment assigned to units and in utility stocks. The scope of field maintenance is fully described in appropriate technical manuals of the 9-1200 to 9-1899 series, DA supply bulletins, and technical bulletins. The third echelon of maintenance is performed by mobile ordnance units, and includes the repair of major items for return to using organizations as well as the reclamation of unserviceable assemblies, subassemblies, and parts, either generated during the repair operations or turned in for exchange by using organizations. The fourth echelon of maintenance is performed by semimobile ordnance units and includes overflow work from the third echelon of maintenance; repair of major items for return to utility stock; and the reconditioning of assemblies, subassemblies, and parts, either generated during repair operations or received from ordnance collecting points. Field maintenance is normally a job shop operation.

c. Depot Maintenance. Depot maintenance is the work performed by semimobile and fixed type ordnance maintenance units and by Class II ordnance installations on equipment for depot stocks. In

In addition to the information contained in the appropriate technical manuals, supply bulletins and technical bulletins are published to cover the scope of depot maintenance. Depot maintenance is the fifth echelon of maintenance and includes the rebuild of major items and the reconditioning of assemblies, subassemblies, and parts for depot stocks. Depot maintenance is normally a production line operation.

7. PRINCIPLES OF MAINTENANCE

Principles of maintenance include:

a. The objective of all maintenance is the detection and correction of incipient mechanical and electrical failures by timely preventive maintenance services and frequent command and technical inspections.

b. Ordnance maintenance is performed in the manner and place that will best accomplish the earliest return of ordnance matériel to the using organization. Corollary principles are:

- (1) Maintenance is accomplished by the lowest echelon of maintenance consistent with the scope of maintenance work authorized to be done; the availability of spare parts, tools, and special repair equipment; the capabilities of personnel; the time available; and the tactical situation.
- (2) No echelon of maintenance will perform maintenance of a scope pertaining to a higher echelon at the expense of neglecting the accomplishment of its own prescribed maintenance. Any echelon of maintenance may perform maintenance of a scope normally ascribed to a lower echelon of maintenance.
- (3) Ordnance equipment requiring maintenance beyond the capabilities of any echelon of maintenance is promptly evacuated to the next higher echelon of maintenance.
- (4) Ordnance maintenance units salvage, reclaim, and evacuate ordnance major items, assemblies, subassemblies, and parts to the maximum possible extent, in order to reduce the demand on ordnance general supply channels for new supplies.

c. Each echelon of maintenance must be provided with the spare parts, tools, special repair equipment, and the trained personnel required to perform maintenance within its authorized scope. Furthermore, reasonable time, space, and working conditions must be provided for the completion of the task.

d. The reporting to the appropriate commander any abuse of ordnance equipment resulting from maintenance performed by a unit above that echelon authorized in its mission.

e. The equipment of other technical services may be maintained by ordnance maintenance units when an over-all increase in efficiency will result from such cross-servicing arrangements.

f. Ordnance maintenance fabricates and repairs essential mechanical and electrical devices developed or improvised in the field, when such service can be performed without impairing its primary mission of repairing ordnance equipment.

g. Without regard to assigned maintenance missions, no item of ordnance equipment is ever denied necessary emergency service by an ordnance maintenance installation.

8. SUPPLY CATEGORY

(See AR 711-50). Ordnance general supplies are classified according to condition as follows:

a. *Serviceable Supplies*. New or used items which are in condition for issue or which may be placed in such condition through processing from storage, installing accessories, and servicing. Within this classification there are two groups—

- (1) *Serviceable Group A*. New or used supplies possessing original appearance and serviceability and ready for immediate issue.
- (2) *Serviceable Group B*. All other supplies which qualify as serviceable.

b. *Unserviceable Supplies*. Items which do not qualify as serviceable. Unserviceable supplies are classified in two groups:

- (1) *Unserviceable Group C*. Supplies which are unserviceable and economically repairable.
- (2) *Unserviceable Group D*. Supplies which are unserviceable and not economically repairable.

c. *Unclassified Supplies, Group UC*. This group consists of supplies which have been identified by stock number or nomenclature but not examined for condition.

d. *Unidentified Supplies, Group U*. Supplies which have not been identified by stock number or nomenclature.

9. PRINCIPLES OF ORDNANCE GENERAL SUPPLY

Principles of ordnance general supply include:

a. Ordnance field maintenance units, assigned to support using organizations, will replenish ordnance general supplies consumed by the organizations they support.

b. Unusual supply requirements expected to materialize because of special operations or environmental factors will be reported promptly.

c. Commanders of ordnance maintenance and supply units will inform the appropriate ordnance staff officer, at the earliest opportunity, of the probable effect of anticipated supply deficiencies on operations.

d. Requirements for major items, assemblies, subassemblies, and parts will be reduced by the serviceable quantity that can be realized from reclamation, repair, and rebuild operations.

e. Rebuild and repair operations will not be undertaken by any echelon of maintenance without assurance that the assemblies, subassemblies, and parts required to support the program can and will be made available for that purpose.

f. General supplies of other technical services may be received, stored, and distributed by ordnance supply units when an over-all increase in efficiency will result from such cross-servicing arrangements.

g. Ordnance supply units safeguard and preserve ordnance general supplies. Ordnance supply units will exploit stocks of captured enemy matériel and sources of local procurement, when authorized by higher headquarters, to reduce the demand on normal supply channels. Ordnance supply units actively defend their installations to prevent capture of ordnance general supplies and exploitation by the enemy.

h. Requisitioning objectives and dues-out will be reviewed by each supply officer at frequent intervals to insure that requirements are active and factual.

i. Each echelon of ordnance supply will order only that stock which experience dictates as necessary to insure continuity of supply under reasonable circumstances.

j. "Fast-moving" parts will be located in supply points convenient to the echelon of maintenance that requires them. "Slow-moving" parts will be held in centrally located depots and distributed as required.

Section II. ORDNANCE PERSONNEL

10. ORDNANCE MAINTENANCE OFFICERS

a. Officers specializing in the maintenance of ordnance equipment will concentrate on one or more of the following fields:

- (1) Small arms.
- (2) Artillery.
- (3) Optical instruments.
- (4) Integrated fire control systems.
- (5) Track vehicles.
- (6) Wheel vehicles.
- (7) Army aviation.

b. In addition to concentration on one or more of the above fields, the ordnance maintenance officer should have a general knowledge of all others and must have a practical working knowledge of:

- (1) Battlefield recovery and evacuation of ordnance equipment.
- (2) Classification, salvage, and reclamation of ordnance general supplies.

c. Ordnance maintenance officers assigned to field maintenance units or serving on the staff of a command having control of field maintenance units should have the following qualifications:

- (1) Be thoroughly familiar with the diagnosis of the mechanical difficulties of ordnance equipment of appropriate types; the use of testing equipment; the classification of ordnance major items, assemblies, subassemblies and parts; the conduct of technical inspections; and the estimation of the labor and time required for maintenance.
- (2) Be thoroughly familiar with the safety regulations to be observed in the maintenance and employment of ordnance equipment.
- (3) Have a working knowledge of all types of work common to the field maintenance of ordnance equipment of appropriate types including the ordering of parts.
- (4) Have a working knowledge of the characteristics and limitations of ordnance equipment.
- (5) Have a working knowledge of the management and scope of organizational maintenance for appropriate types of ordnance equipment.
- (6) Be able to supervise work performed by repairmen, to detect poor working practices, and to correct and instruct partially trained repairmen.
- (7) Be able to supervise the battlefield recovery and evacuation of disabled ordnance equipment, and to prepare and preserve ordnance major items, assemblies, subassemblies, and parts for evacuation.
- (8) Have the ability to organize and conduct courses of on-the-job training for organizational mechanics, field maintenance repairmen, and indigenous civilian laborers.

d. Ordnance maintenance officers assigned to depot maintenance units or serving on the staff of a command having control of depot maintenance units should have the following qualifications:

- (1) Be thoroughly familiar with the planning of the layout and operation of production lines for the repair and rebuild of ordnance matériel.
- (2) Have a working knowledge of the use of precision measuring tools and testing devices used for the inspection of assemblies and parts.

- (3) Be able to classify ordnance general supplies as to serviceability and to determine the requirements for supplies required to support repair and rebuild programs.
- (4) Have a working knowledge of the use of machine tools and to be able to train and supervise ordnance rebuilders, both military and civilian.
- (5) Be able to prepare and interpret time and action studies and modify operations to reflect the most economical utilization of available personnel.
- (6) Have the ability to organize and conduct courses of instruction for military rebuilders and for indigenous civilian laborers.

11. ORDNANCE GENERAL SUPPLY OFFICERS

a. Ordnance general supply officers should be qualified in all phases of ordnance general supply service. Only in large depots is it possible to assign an officer exclusively to a single field, such as warehousing, shipping, receiving, etc.

b. Ordnance general supply officers assigned to field and depot maintenance units or serving on the staff of a command having control of field and depot maintenance units should have the following qualifications:

- (1) Be familiar with the ordering, receiving, accounting for, and issue of ordnance general supplies; the methods of storing, packing, and preserving ordnance general supplies; the inspection of property records; and the identification of ordnance equipment, accessories, spare parts, tools, and supplies.
- (2) Be thoroughly familiar with the safety precautions to be observed in handling ordnance general supplies.
- (3) Have a working knowledge of the editing of requisitions and the keeping of supply records.
- (4) Be able to supervise the work performed by supply personnel; to detect poor working practices; and to correct and instruct incompletely trained personnel.
- (5) Be able to assist in the solution of problems in connection with the administration, management, and scope of organizational, field, and depot maintenance.

c. Ordnance general supply officers assigned to depot companies or serving on the staff of a command having control of depot companies should have the following qualifications:

- (1) Be thoroughly familiar with the planning, organization, and operation of ordnance general supply depots; warehouse

- layouts and operations; the conduct of inventories, and property accounting procedures.
- (2) Have a practical working knowledge of the use of matériel handling equipment and accounting machines.
 - (3) Be able to train and supervise supply personnel, both military and civilian.
 - (4) Be able to prepare and interpret time and motion studies and to modify operations to reflect the most economical utilization of available personnel.
 - (5) The ability to organize and conduct courses of instruction for indigenous civilian laborers.

12. ORDNANCE WARRANT OFFICERS AND ENLISTED PERSONNEL

The duties and qualifications of ordnance maintenance and general supply warrant officers and enlisted personnel are outlined in the SR 650 series of Department of the Army Special Regulations on career field. Ordnance unit commanders and ordnance staff officers must be thoroughly familiar with the contents of special regulations covering career fields in order to properly assign duties to supervisors and specialists, and to direct and supervise the training of individuals. The special regulations on career fields are a compilation of job descriptions appropriate to each military occupational specialty listed in tables of organization. Individuals are trained to meet the standards contained in job descriptions and standing operating procedures developed on the basis of a satisfactory performance of the skill and ability outlined by job descriptions.

Section III. DUTIES OF PERSONNEL

13. ORDNANCE COMMANDER

a. The commander of an ordnance company, battalion, or group, commands his organization and any attached ordnance units. The personal character, foresight, military experience, and technical knowledge of the ordnance commander provides the positive leadership necessary for the successful accomplishment of assigned missions. He actively supervises all phases of the technical, administrative, and military training conducted within the unit. The ordnance commander is personally responsible for all his organization does or fails to do. The ordnance commander cannot delegate responsibility for the general managership of the technical service mission to a subordinate. Subordinates should be charged with supervisory responsibilities for all elements of the technical service mission, reporting through appropriate supervisory channels to the ordnance commander as general manager.

b. The initial responsibility of the ordnance commander is to plan, direct, and supervise the training of the organization. The objective of training is to develop a coordinated team which can—

- (1) Perform a technical service mission in the field.
- (2) Accomplish its own administration.
- (3) Meet high military standards of discipline.
- (4) Defend its own installation against enemy attack.

c. After satisfactory standards of training have been attained, the ordnance commander continues to develop subordinates so that routine technical, administrative, and military tasks are accomplished as a matter of standing operating procedure and to train individuals to accept and discharge increased responsibilities in their own and similar career fields. The chain of command within the unit is utilized in order to develop a high degree of initiative, resourcefulness, and a sense of personal responsibility in all supervisory personnel.

d. The ordnance commander is notified of the technical mission of his organization by the next higher commander, prepares a plan to carry out the mission, issues the necessary orders to execute the plan, and personally supervises the work during progress. The ordnance commander avoids becoming so involved in the administration and routine operations of the organization that he is not immediately available to attend to unusual and exceptional situations, and spends the greater part of the time inspecting operations to verify both the quantity and quality of work being done. During these inspections the ordnance commander enforces the observance of fire and safety regulations, studies procedures and methods to determine more efficient ways and means of accomplishing the mission, and constantly searches for means to improve the morale and welfare of the organization. The security of the installation against enemy attack and sabotage, and the preparation of plans for defense is of paramount importance to the ordnance commander in the field.

e. The ordnance commander insures that ordnance general supplies are conserved and used judiciously; that transportation is used economically, and that clothing, equipment, and supplies are not wasted within his command. At frequent intervals he reviews AR 235-5, 240-5, and 245-5, to insure that his administration of the unit is adequate.

14. ORDNANCE STAFF

a. Each ordnance battalion and group commander is provided with a staff to assist in the administration, command, and technical direction of the command. The function of the staff is to relieve the ordnance commander of time-consuming and distracting details; to supervise and coordinate operations; to evaluate and study prob-

lems; to advise the ordnance commander as general manager of the organization of the progress made in accomplishing the mission; and to recommend appropriate action to improve operations. Ordnance staff officers cultivate cooperative and friendly relationships with the commanders of subordinate ordnance units and the staff of higher headquarters by means of frequent personal visits and discussion of problems and progress. An ordnance staff officer organizes and trains assistants to function during his absence, and insures that they have sufficient understanding of problems and policies to be able to do so effectively. Conferences of ordnance staff officers are held at frequent intervals to insure that the ordnance staff is thoroughly oriented on plans and policies to cover all aspects of operations. Conferences or personal contacts between ordnance staff officers of subordinate and higher headquarters are held to increase understanding and teamwork at all levels. The ordnance staff is grouped according to staff functions into a unit staff and a special staff.

b. The unit staff includes the executive officer, the adjutant (S1), the intelligence officer (S2), the operation and training officer (S3), the supply officer (S4), and the field or depot maintenance officer.

c. The special staff includes officers who supervise or perform a service function for the unit, such as the surgeon, chaplain, motor officer, food service supervisor, etc.

15. EXECUTIVE OFFICER

The principal assistant and advisor to the ordnance commander is the executive officer. In this capacity the executive supervises the routine details of operations and administration, thereby enabling the commander to devote the maximum time to unusual or new problems. The executive officer keeps himself abreast of the situation and future plans and is constantly prepared to assume command in the absence of the commander. The responsibilities of the executive officer include:

a. The direction and coordination of the staff and headquarters personnel.

b. Representing the commander during temporary absences.

c. Assignment of tasks to members of the staff.

d. Review of all instructions issued by the staff to insure conformity to policy.

e. Supervision of all plans and review of all periodic and special reports to be submitted to higher headquarters.

16. ADJUTANT (S1)

The adjutant is responsible for the administration of the headquarters and coordinates the administration of attached ordnance units.

Ordnance companies must retain their ability to operate separately because, at any time, they may be detached from one headquarters and attached to another. Those administrative functions which can be coordinated by a higher headquarters in the interest of more efficient administration are coordinated by the adjutant. The responsibilities of the adjutant include:

a. Preparation of personnel reports and instructions as to time of submission, period covered, form, and channels for strength reports rendered by the attached ordnance units.

b. Receiving replacements consigned to the unit and arranging for their delivery to attached ordnance units.

c. Coordinating and supervising burials and graves registration functions delegated to the headquarters.

d. Submitting recommendations for citations, decorations, honors, and awards; supervising the distribution of mail; supervising the leave program; coordinating religious activities with the chaplain; and planning, coordinating, and supervising the athletic and recreation program.

e. Civil affairs functions, including the administrative details incident to the employment of indigenous civilian labor.

f. Supervising personnel procedures, including transfers, assignments, promotions, demotions, and classification of personnel.

g. Supervising the internal arrangement and the movement of the headquarters.

h. Keeping the unit journal and files of official correspondence and providing clerical assistance for the staff.

17. INTELLIGENCE OFFICER (S2)

The intelligence officer is responsible for the organization and operation of a counter-subversive and counter-sabotage system within the headquarters and in attached ordnance units. The responsibilities of the intelligence officer include:

a. Securing and distributing maps, aerial photographs, and photo maps.

b. Reconnaissance for new locations for the headquarters and attached ordnance units.

c. Planning and supervising intelligence and security training within the unit and disseminating intelligence information to those entitled to receive it.

d. Assisting the operations and training officer (S3) in maintaining the situation map and insuring that all attached ordnance unit commanders are aware of the enemy situation in their areas.

e. Advising the unit commander as to enemy capabilities and maintaining liaison with intelligence officers of adjacent units.

f. Assisting technical intelligence teams operating with or in the vicinity of the unit.

18. OPERATIONS AND TRAINING OFFICER (S3)

The operations and training officer is charged with staff responsibility for the organization, training, and tactical employment of the battalion.

a. Specific duties of the operations and training officer with regard to organization include:

- (1) Making a continuous study of the organization and equipment of attached ordnance units and preparing recommended changes to tables of organization and equipment.
- (2) Recommending the assignment of support missions for attached ordnance maintenance companies, and breakdown of the equipment density list between attached depot companies in coordination with the maintenance officer and the supply officer, and publishing support missions and notifications to supported using organizations.
- (3) Computing personnel requirements in terms of manhours and skilled specialists required to accomplish the mission of the unit and converting these computations to a specific troop basis to show the numbers and types of ordnance companies required to be attached to the battalion headquarters.

b. Specific duties of the operations and training officer with regard to training include:

- (1) Preparing training directives, programs, orders, and field exercises based on plans approved by the battalion commander.
- (2) Selecting training areas and ranges.
- (3) Organizing and conducting schools for military and technical training; coordinating with the maintenance officer and the supply officer to determine the program of instruction, selection and training of instructors, and selection of students.
- (4) Recommending the selection of personnel for school quotas allotted by higher headquarters and coordinating with commanders of attached ordnance units in the selection of personnel.
- (5) Conducting training inspections and preparing and supervising training tests.
- (6) Preparing training records and reports.
- (7) Coordinating and supervising troop information and educational activities.

c. Specific duties of the operations and training officer in connection with the tactical employment of the unit include:

- (1) Keeping the battalion commander informed of the tactical situation and submitting recommendations on internal security and defense of the installations.
- (2) Maintaining an up-to-date situation map and insuring that all staff officers and commanders of attached ordnance units are aware of the tactical situation.
- (3) Coordinating reconnaissance for new locations for attached ordnance companies and selecting alternate sites to be occupied in case of heavy enemy attack.
- (4) Planning security measures during marches and displacement of attached ordnance units.
- (5) Supervising plans for the evacuation of installations and the destruction of ordnance matériel in the event of a general retrograde movement.
- (6) Coordinating communications within the unit, including telephone and messenger service to attached ordnance companies, and tie-in with the local signal service for external communications.
- (7) Preparing the operations order to show support missions of attached ordnance units.

19. SUPPLY OFFICER (S4)

a. The supply officer of an ordnance unit is responsible for both ordnance general supply and unit supply. The responsibility for unit supply normally assigned to the S4 may be charged to an assistant to the supply officer as an additional duty, thus enabling the supply officer to devote his time and attention to the problem of ordnance general supply. Since ordnance units are separate units, they must maintain their ability to sustain themselves against the day when they may be transferred from one headquarters to another. If more efficient operations will result from consolidation of the supply efforts of the attached ordnance units, the supply officer may take such action as is necessary.

b. His responsibility for unit supply includes provision of rations, water, gasoline and lubricants, clothing and equipment, ammunition, cleaning and preserving materials, spare parts required for organizational maintenance of equipment, and maintenance of records for unit equipment.

c. His responsibility for ordnance general supply varies widely with the mission and location of the ordnance unit. The duties of the supply officer with respect to ordnance general supply are dis-

cussed in subsequent chapters dealing more specifically with the various ordnance units.

d. He establishes a unit supply SOP for the various conditions encountered in the field.

e. He prescribes supply objectives for the unit in accordance with existing directives from higher headquarters on such things as stock levels, storage, issues, etc.

f. He inspects all activities under his supervision and corrects any discrepancies.

20. MAINTENANCE OFFICER

The maintenance officer is charged with the direction and supervision of the maintenance operations in attached ordnance maintenance units. The responsibilities of the maintenance officer varies with the mission and assignment of the ordnance units. The duties of the maintenance officer are discussed in subsequent chapters dealing more specifically with the various ordnance units.

21. MEDICAL OFFICER

The medical officer commands the attached medical detachment of the ordnance battalion headquarters. The responsibilities of the medical officer include—

a. Supervising the technical training of the ordnance units in personal hygiene, field sanitation, and first aid.

b. Coordinating evacuation and sanitation with the supply officer.

c. Preparing a medical plan based on the tactical situation and the plans of the unit commander.

d. Recommending a site for establishing the battalion aid station and supervising the care, treatment, and evacuation of casualties.

e. Keeping the unit commander informed of the medical situation within the area.

22. CHAPLAIN

The chaplain conducts religious services for the attached ordnance companies. By an exchange of services with the chaplains of adjacent units, the chaplain insures that adequate facilities are available for all denominations. Properly utilized, the chaplain is an important staff assistant who can interpret the mental and moral attitude of individuals within the units. Proper reception of his recommendations will often prevent circumstances which might otherwise result in a reduction of working efficiency.

23. MOTOR OFFICER

The motor officer supervises the use and the organizational maintenance of motor transportation assigned to the headquarters and inspects the organizational maintenance of attached ordnance units. The motor officer is assisted by the motor sergeant, the dispatcher, and the organizational motor mechanics of the headquarters unit.

24. FOOD SERVICE SUPERVISOR

The food service supervisor, normally a warrant officer, assisted by the food service technicians, supervises the food service of the ordnance units attached to the ordnance battalion or group headquarters.

25. PLATOON AND SECTION LEADERS

a. Platoon Leaders. Platoons and sections of ordnance companies are organized to accomplish a technical service mission. Platoon leaders command the personnel assigned to their platoons and are responsible for their military training. To insure that the platoon develops into an efficient team, the platoon leader must be thoroughly familiar with the skills, capabilities, and personalities of his men. The platoon leader is responsible for the work performed by his platoon and constantly seeks for ways to improve both the quantity and quality of work accomplished. Commissioned officers, warrant officers, and non-commissioned officers assigned as section leaders have the same responsibility as platoon leaders.

b. Supervisors of Repair Shops. Supervisors of repair shops are responsible to the commanding officer for the operation of repair shops. They should be thoroughly familiar with the operations and current status of work in the shops; plan future requirements for trained personnel, equipment, and matériel; and make scheduled and unscheduled inspections as are necessary to insure that all shop sections function efficiently.

c. Section Foreman. Section foremen are responsible to the supervisors of repair shops for section efficiency, condition and completeness of equipment, training of personnel, and the readiness to operate in the field. They must be thoroughly familiar with the skills, capabilities, and personalities of the men assigned to their section. Following the policy of the shop supervisor, they will insure that equipment does not deteriorate because of neglect or misuse and will report any abuses to the supervisor of the repair shop. Section foremen in charge of shop sections should be qualified inspectors and know the best way of repairing items for which their sections are responsible. This expertness must be obtained by performing some

actual inspection and repair, by closely observing section specialists at work, and by contact with using troops.

26. FIRST SERGEANT

The first sergeant is the principal enlisted assistant of the company or detachment commander and assists him in the administration of the unit. The company or detachment commander must have complete confidence in his first sergeant, since this noncommissioned officer is the contact between the commander and the enlisted personnel. The first sergeant of an ordnance unit is not directly involved with the accomplishment of the technical mission, yet he must have a practical knowledge of the problems and procedures incident to the accomplishment of that mission, and he is personally responsible that administrative requirements on the time of specialists are reduced to an absolute minimum. He operates the orderly room as a command post and message center for the commander and maintains files of correspondence. He assigns work to and supervises the personnel and administrative clerks, the messengers, truck drivers, and communications personnel. In combat, he supervises the arrangements for internal security and for defense of the installation in accordance with the plans of the commander.

27. MESS STEWARD

The mess steward, assisted by other food service personnel, receives and verifies rations and divides them into meals. He prepares and serves meals for the unit and insures that personnel on detached missions are provided with food or that adequate arrangements have been made for their feeding. In an ordnance unit, the serving of meals must be coordinated with the work schedule and the mess steward maintains liaison with platoon and section leaders to insure that schedules are suitable and that arrangements are made to care for all working parties.

28. UNIT SUPPLY SERGEANT

The unit supply sergeant receives and issues organizational supplies, except rations and those pertaining to the ordnance mission (ordnance general supply). He maintains records of all organizational property for which the unit commander is responsible, including technical equipment, and insures that inventories and memorandum receipts for all property issued to individuals are current. He supervises the work of the unit armorer, if one is assigned, and inspects all weapons not issued. In maintenance companies, he

arranges with the leader of the small arms section for the inspection and repair of weapons.

29. DUTIES OF REPAIRMEN

All repairmen are directly responsible to their section foreman or supervisor. In performing their task repairmen will—

- a.* Do routine repairs or adjustments in the best way possible.
- b.* On special problems, where not specifically instructed, work out a satisfactory solution and get approval of their immediate supervisor. In the absence of the immediate supervisor or anyone else authorized to approve, they will proceed with the job to the best of their ability.
- c.* Try to develop improved jigs or fixtures to expedite and simplify routine repairs. (Such jigs or fixtures should not be too elaborate and should not require approval by higher authority as their purpose is to simplify and expedite work and to save manhours and supplies).
- d.* Sign and be responsible for tools and machines specifically assigned for their use.
- e.* Clean and properly store or cover all machine and hand tools or other equipment used, or upon which work is being done.
- f.* Make proper entries on job orders and technical inspection work sheets.
- g.* Report unserviceable shop equipment to the section foreman for his action.

CHAPTER 2

ORDNANCE UNITS

Section I. GENERAL CHARACTERISTICS

30. FIELD MAINTENANCE UNITS

a. These are the most common types of ordnance units. Several types of units are required to maintain the ordnance equipment of the army in the field. Each type of ordnance field maintenance unit is organized, trained, and equipped to accomplish its mission in that part of the combat zone, or the communications zone, where it is normally employed. The operating procedures of field maintenance units are discussed in chapters 4, 6, 7, and 10 of this manual.

b. It is essential that each using organization receive maintenance and supply from a single field maintenance unit. To accomplish this, certain field maintenance units in the combat zone must be in close proximity to combat units and service units. These field maintenance units are provided with sufficient motor transportation to move all personnel, equipment, and supplies at one time in order to accompany the supported using organization as it displaces. The requirement for mobility imposes a limit on the scope of field maintenance that can be accomplished by mobile ordnance units in the combat zone and additional field maintenance units must be provided with heavy equipment and bulky assemblies carried in semitrailers. These heavy maintenance units are semimobile and displace by shuttling or by pooling prime movers. In the communications zone, it is practical to combine the characteristics of the mobile and semimobile field maintenance units in the same company because of the greater stability of using organizations in that area.

c. The ratio of combat equipment to wheel vehicles varies with the proximity to the front. This condition requires the organization of field maintenance units capable of supporting all types of combat equipment and wheel vehicles, while others are organized to support wheel vehicles and small arms only. In the communications zone, heavy concentrations of antiaircraft artillery will be found around key installations and special maintenance teams attached to field maintenance units are required for this purpose.

d. The recovery of ordnance equipment from the battlefield, the classification and reclamation of ordnance matériel, and the assembly of vehicles received in unit packages are specialized missions which are met by field maintenance units organized for those purposes.

e. Table I illustrates types of field maintenance units.

Table 1. *Field maintenance units.*

Unit	T/O&E	Mobility	Echelon of maintenance	Mission
Ord Medium Maint Co.	9-7	Mbl	Third	Direct support of tactical units, including all ordnance equipment except army aircraft.
Ord Maint Co Inf Div.	9-8N	Mbl	Third	Direct support of infantry division, units including all ordnance equipment except army aircraft.
Ord Hv Maint Co.	9-9	Smb1	Third & Fourth.	Heavy maintenance of all ordnance equipment, except wheel vehicles and army aircraft.
Ord Maint Bn, Armd Div. . .	9-65N	Mbl	Third	Direct support of armored division, including all ordnance equipment except army aircraft.
Ord Maint Co, Abn Div. . .	9-87	Mbl	Third	Direct support of airborne division, including all ordnance equipment except army aircraft.
Maint Co, Amph Spt Brig . .	9-97	Mbl	Third	Direct support of amphibious support brigade, including wheel vehicles and small arms.
Ord MAM Co.	9-127	Mbl	Third	Direct support of service units, including wheel vehicle and small arms only.
Lt Actt Maint Co.	9-148	Mbl	Third & Fourth.	Direct support of Army Aircraft.
Re1m & Clas Co.	9-167	Mbl	Third	Reclamation and classification of ordnance general supplies.
Ord Recovery Co.	9-187	Mbl	.....	Battlefield recovery of ordnance equipment.
Ord HAM Co.	9-197	Smb1	Third & Fourth.	Heavy maintenance of wheel vehicles.
Mtr Vehicle Assy Co.	9-348	Smb1	Third	Assembly of crated wheeled vehicles.
Fld Maint Co.	9-357	Smb1	Third & Fourth.	Direct support of service units and heavy maintenance of wheel vehicles and small arms only.
Coll Point Co.	9-358	Smb1	Third	Reclamation and classification of ordnance general supplies.

31. ORDNANCE SUPPLY UNITS

a. Several types of ordnance general supply companies are required to supply ordnance matériel. Each type of ordnance general supply company is organized, trained, and equipped to accomplish its mission in that part of the combat zone or the communications zone where it is normally employed. The operating procedures of ordnance supply companies are discussed in chapters 5 and 9 of this manual.

b. Because of the bulk and the special care required in the storage and distribution of towed artillery, tracked and wheeled vehicles, these major items are handled by park companies, while other ordnance general supplies are handled by depot companies. Depot companies employed in the combat zone are semimobile units and are expected to move by shuttling or by pooling prime-movers. Depot companies employed in the communications zone are fixed type units and are provided with sufficient transportation for administrative purposes, liaison, and for use in accomplishing their supply mission. Depot companies do not deliver ordnance general supplies. Park companies employed in the combat zone normally hold a considerable quantity of artillery and vehicles of all types and, when required to displace, are capable of moving without assistance. Park companies employed in the communications zone are fixed type units. The park company employed in the combat zone includes a distribution platoon to deliver towed artillery and vehicles. In the communications zone, a distribution company is employed to deliver towed artillery and vehicles.

c. Table II illustrates types of supply units.

Table II. Ordnance supply units.

Unit	T/O&E	Mission
Ord Depot Co (Army).....	9-57	Procures, stores, distributes ordnance general supplies, except towed artillery and vehicles.
Ord Arty & Veh Park Co (Army) .	9-137	Stores, services, delivers towed artillery and vehicles.
Ord Distr Co (COMZ).....	9-337	Delivers towed artillery and vehicles.
Ord Park Co (COMZ).....	9-359	Stores and services towed artillery and vehicles.
Ord Sup Depot Co (COMZ).....	9-367	Procures, stores, distributes ordnance general supplies except towed artillery and vehicles.

32. DEPOT MAINTENANCE UNITS

a. Ordnance units employed in the communications zone for the rebuild of ordnance equipment and assemblies are employed on a functional basis peculiar to the specific mission for which they are organized, trained, and equipped. Normally, ordnance depot maintenance companies have a functional mission associated with one particular segment of an ordnance career field.

b. The ordnance returned matériel system regulates the return of unserviceable ordnance major items, assemblies, subassemblies, and parts to depot maintenance shops, where they are restored to serviceable condition in order to reduce the demand for new supplies. The depot maintenance units operating the shops are fixed type units and operate in permanent or semipermanent installations. They do not employ mobile or vehicle mounted tool equipment, nor is their supply required to be mobile. Motor transportation provided fixed type units is limited to that required for unit administration, liaison, and for accomplishing their mission in permanent shops. The operating procedures of the various units are discussed in chapter 8 of this manual.

c. Table III illustrates the types of depot maintenance units.

Table III. Depot maintenance units.

Unit	T/O&E	Mission
Ord Armt Rebuild Bn (COMZ) . . .	9-315	Rebuild of track vehicles, artillery, instruments, fire control systems, and small arms and their assemblies.
Ord Autmv Rebuild Bn (COMZ) . .	9-325	Rebuild of engines and power train assemblies for wheel vehicles.
Ord Tire Rep Co (COMZ)	9-347	Re-tread and sectional repair of vehicular tires and tubes.

33. CELLULAR TYPE UNITS

a. Units smaller than an ordnance company are required from time to time and are organized under T/O&E 9-500. Cellular type units have a functional mission associated with one particular segment of an ordnance career field. Normally, cellular type units are dependent on a larger ordnance unit for food service, or several cellular type units may be combined into an ordnance service company with a company headquarters section organized for that purpose. Cellular type units may have any degree of mobility and may be utilized in either the combat zone or the communications zone. Operating procedures are generally similar to those in ordnance companies of the same type.

b. Table IV illustrates a few of the most common types of cellular units.

Table IV. Cellular units.

Unit	T/O&E	Mission
General supply team.....	9-500	Receive, store, and issue ordnance class II and IV supplies.
Automotive maintenance team....	9-500	Perform organizational maintenance of vehicles.
Wheel vehicle repair team.....	9-500	Provide field maintenance (3d echelon only) for wheel vehicles.
Track vehicle repair team.....	9-500	Provide field maintenance (3d echelon only) for track vehicles.
Tire repair team.....	9-500	Sectional repair, spot repair, and tube repair on all sizes of vehicular tires and tubes.
Army aircraft repair team.....	9-500	Provides field maintenance support for army aircraft.
Ballistic and technical service team.	9-500	Determines comparative velocities of artillery in the field.
Artillery repair team.....	9-500	Support of artillery and related non-electrical fire control instruments.
Instrument repair team.....	9-500	Maintenance of electrical components, remote control systems, and electronic fire control equipment.
Small arms repair team.....	9-500	Field maintenance of small arms.

34. POLICY ON TOOLS

Tool sets are divided into three groups; maintenance category tool sets, common tool sets, and special tool sets. Tool sets are listed in ORD 6 SNL J series.

a. Maintenance category sets correspond to the three maintenance categories; organizational, field, and depot. The common tools applicable to a relatively large range of repair operations appropriate to each maintenance category are listed. The authorization for supply for ordnance units is indicated in tables of organization and equipment; and for posts, camps, and stations in T/A 20.

b. Common tool sets pertain to specification serial numbers as shown in tables of organization for ordnance units and tables of distribution for installations. The basis for issue is indicated in ORD 6 SNL J-10.

c. Special tool sets are peculiar to one or more major items. The authorization for supply is indicated in ORD 6 SNL J Series.

35. POLICY ON ARMAMENT

Ordnance units, like other service units, are also trained to fight. Limitations in armament, organization, and training time preclude independent employment in sustained combat. In accordance with SR 310-30-1, ordnance maintenance and general supply units are classified in three categories in establishing the policy on armament:

a. The first category includes those mobile and semimobile units that are habitually located in the combat zone. Normally these units are not exposed to enemy ground attack, except for infiltrating groups or an armored penetration, and are located in areas where antiaircraft protection is available. They are required to displace frequently according to the progress of tactical operations. Individual weapons are provided as well as such unit armament as is deemed suitable for protection of the unit on the road or for protection of the installation. Normally individual armament will consist of carbines or rifles and unit armament will be limited to a few truck-mounted .50 caliber machine guns and rocket launchers.

b. The second category includes those mobile and semimobile units that are habitually located in the communications zone but whose duties require them to serve close to, or to cross the army rear boundary. These units are not exposed to enemy ground action, except in the event of a major enemy breakthrough. They are susceptible to attack by airborne troops, by partisans and guerillas, and are not normally located in areas where antiaircraft protection is afforded. Individual weapons are provided and such unit armament as is required for protection of the installation. Normally, individual armament will consist of carbines and unit armament will be limited to a few .50 caliber machine guns on combination ground and antiaircraft mounts.

c. The third category includes fixed type units that are habitually located in the communications zone and have no occasion to enter the combat zone or the forward areas of the communications zone. They may be exposed to a hostile civilian populace and are provided with individual armament in such quantities as to provide a pool of weapons for interior guard and security purposes. Unit armament is not provided as the defense of installations manned by units of this type are provided for in the plans of local defense commanders.

36. POLICY ON SUPPLY

Each echelon of ordnance general supply is limited to that stock level which experience indicates as necessary to insure continuity of supply under reasonable circumstances. "Fast moving" parts are located in supply points convenient to the echelon of maintenance

that requires them. "Slow moving" parts are held in centrally located depots and distributed as required. Reference is made to ORD 7 and 8 of the appropriate standard nomenclature lists of the Ordnance Catalog. The lists contained in ORD 7 are stock levels for using organizations. ORD 8 is used as a stockage guide by field maintenance units in computing their basic load of parts until such a time as experience is gained. Thereafter actual issue experience will be used as the basis for stockage. ORD 8 is also used by depot maintenance units in computing the initial requirements for rebuild and reconditioning programs.

Section II. ORGANIZATIONAL RECORDS AND REPORTS

37. GENERAL

Ordnance units must maintain records of work accomplished, problems encountered, methods employed, and policies developed as the basis for future planning and for the orientation of officers and key specialists received as replacements. There is never a reserve of ordnance units. The only way for an ordnance unit commander to obtain man-power to apply to a new or expanded mission is by analysis of current operations to detect uneconomical or unnecessary procedures. After such an analysis, the unit commander may apply any savings in man-hours to more important work.

38. ORDNANCE WORK SHEET

Each ordnance officer charged with the direction or supervision of technical work is required to maintain notes on information pertaining to his job. A work sheet for such notes, consisting of a number of pages fastened together and indexed for the various subdivisions of his job, provides an orderly means of recording information. Such a system serves to refresh the memory of the incumbent, provides a basis for plans and the preparation of reports, and serves as a policy for his successor. The ordnance work sheet is maintained by platoon and section leaders, ordnance unit commanders, and staff officers. The work sheet is not carried on the person of the ordnance officer but is left at his office, accessible to his assistants who are required to record information in his absence for inclusion in the work sheet.

39. STANDING OPERATING PROCEDURES

Routine ordnance procedures within the ordnance unit are reduced to writing and published as standing operating procedures in order to outline the procedure to be followed in the absence of instructions

to the contrary. Eventually, every routine operation should be covered by a published procedure. The objective of standing operating procedures is to—

a. Simplify and shorten orders, to expedite transmission of orders, and to insure their understanding.

b. Simplify training of personnel, especially replacements.

c. Promote understanding and team-work within the unit and higher headquarters.

d. Facilitate and expedite operations generally and to minimize confusion and errors.

40. UNIT JOURNAL

The Journal of an ordnance unit is a chronological record of events affecting the unit. It is used to record a synopsis of correspondence and contains a transcript of verbal agreements, messages, or orders. It is a part of the historical record of the unit and is maintained by the adjutant (S1) or by the first sergeant.

41. HISTORICAL RECORD

An activities report is submitted monthly by ordnance units in the theater of operations. A narrative report is submitted at the close of each calendar year by ordnance units in the zone of interior. Refer to AR 345-105 and SR 345-105-1. Matters to be included are—

a. Statistical data of work accomplished and personnel employed.

b. Explanation of peculiar problems and solutions thereof.

c. Discussion of significant lessons learned.

42. MAPS, OVERLAYS, AND SKETCHES

Maps, overlays, and sketches are valuable aids in presenting a clear, brief picture of the situation. Personnel are trained to use them in reports and orders.

a. The situation map is a graphic presentation of the current tactical and administrative situation. It should also show the enemy situation where applicable. It is maintained jointly by the unit staff under the supervision of the executive officer.

b. Overlay tracings of the situation map, or parts thereof, are used as parts of the historical record and to accompany orders.

Section III. SAFETY PROGRAM

43. SAFETY ORGANIZATION

To insure the initiation and continuation of a progressive accident prevention program, a safety organization should be established in each ordnance unit to include the following:

a. *Safety Officer.* An officer designated to supervise and coordinate all safety activities within the unit.

b. *Safety Committee.* A committee consisting of section supervisors or foremen. This committee should hold meetings at regular intervals for the purpose of discussing accident prevention methods and other pertinent information from which all may obtain benefit in solving problems in their sections.

44. FUNDAMENTAL PRINCIPLES

In formulating an effective safety program within any organization, three basic principles of accident prevention must be recognized and acted upon. These principles are:

a. *The Creation and Maintenance of Active Interest.* Supervisors and repairmen must be interested to such a degree that they will actively participate in any safety program that is set up. Appeals to pride and skill in workmanship are more effectively applied to the repairmen than to supervisors, whereas the effect of accident occurrence on volume and quality of production appeals more to supervisors than to repairmen.

b. *Fact Finding.* This principle refers to the assembling of essential information bearing first of all upon accident occurrence and finally upon accident prevention. With regard to accident occurrence, the following facts should be determined; who was injured; the time and place of the injury; the severity and often the cost of the injury; and the type accident and injury. For accident prevention purposes, it is necessary to know how and why the accident occurred and, in particular, the specific personal unsafe act, together with the reason for its commission and the specific mechanical or physical hazard, if one existed.

c. *Corrective Action Based on the Facts.* It logically follows that the actual direct work of preventing accidents is the final step which requires, first of all, the creation and maintenance of interest and which must be governed by the facts of the particular problem in question. Any corrective action that is finally determined upon should be based on available and pertinent facts.

45. COMMANDERS RESPONSIBILITY

The commanding officer of an ordnance unit is solely responsible for the safety of his unit. It is the responsibility of the commanding officer to insure that all activities of his unit are conducted in accordance with established safety rules. Where no existing safety rule applies or where a deviation from an established safety rule is desired, it is the responsibility of the commanding officer to submit

a request, including full particulars and detailed plans and specifications, to such headquarters as may be appropriate, for decision.

46. SUPERVISORS RESPONSIBILITY

a. The direct supervisors having continuous daily contact with operating personnel and the hazards to which they are exposed are the persons through whom the full force and effect of all accident prevention measures find application in daily operations.

b. The supervisor or foreman should call frequent and regular meetings to brief all personnel on safety procedures. Such meetings should be held at the work location, and the objective should be to brief all personnel on safe job performance for new or unusual work or for routine jobs, and to re-impress workers with the need for constant alertness and observation of safety measures. The following items should be discussed:

- (1) The overall job and the end result expected.
- (2) The why, how, and when of the job and bring out the ideas of the group as to methods and procedures.
- (3) Determine key points, steps, or actions that could make or break the job, and emphasize the importance of proper handling at each step.
- (4) Be sure that each man understands his assignment.
- (5) Discuss probable and known hazards and unusual interruptions or developments, and decide on steps to be taken under such contingencies.
- (6) Check tools and equipment to insure that proper types in sufficient quantities are provided.
- (7) Emphasize the need for prompt reporting of all injuries, accidents, or near-accidents, and urge first-aid treatment where required.
- (8) Point out the need for safety observations to detect and correct unsafe practices and conditions, and correct or remove them before an accident occurs.
- (9) Develop a definite routine for making the final checks.

47. INDIVIDUAL RESPONSIBILITY

It should be understood by all individuals that safe practice rules have been established for their protection and welfare. It is their responsibility to adhere to all instructions and use all safeguards accompanying machinery, equipment, tools, and processes. They should develop intelligent safe working habits in order to protect themselves and fellow workers from injury and prevent damage to matériel, equipment, and facilities.

48. SAFETY RULES

A few of the rules that should be included in any safety plan or accident prevention plan are as follows:

a. Reporting of Accidents. A definite reporting procedure should be established in reporting accidents or injuries to personnel or equipment, no matter how slight.

b. Cause Determination. The commanding officer or a person designated by him should make it a policy to investigate all injuries or accidents to determine the cause and remove any hazards in order to prevent a re-occurrence.

c. Fire Prevention. "NO SMOKING" signs should be posted and enforced wherever fire hazards exist, and designated safety areas established where smoking is allowed. Gas, oils, and other inflammables should be stored in approved locations.

d. Tools and Equipment. All tools and equipment should be inspected regularly for such things as frayed electric cords, splintered hammer handles, and dirty or improper glass in welding shields.

e. Drivers. All personnel should be trained in driving any vehicle or materials handling equipment used by the unit, so that in any eventuality they can operate the equipment safely.

f. Fire-Fighting Equipment. Stations for the location of fire-fighting equipment must be determined. Such equipment should be inspected frequently for condition and serviceability.

49. USE OF TRAINING MANUALS AND TRAINING BULLETINS

All personnel should familiarize themselves with the safety precautions covered in the training manuals and training bulletins relative to the equipment which they are handling. Prior to undertaking repair of items which may be unfamiliar to the repairman, he should refer to the appropriate TM on precautions to be taken and if necessary consult the supervisor on any points in question.

50. PRECAUTIONS IN HANDLING GASOLINE

The properties and characteristics of gasoline make it one of the greatest potential accident hazards to be guarded against within all organizations. The precautions in handling gasoline are well covered in AR 850-20 and must be observed by all personnel.

51. REFERENCES

The special regulations (SR's) of the 385 series covering the subject of safety, organization, and reporting procedures should be consulted in the establishment of any safety program.

CHAPTER 3

ORDNANCE COMMAND UNITS

Section I. GENERAL

S2. HEADQUARTERS AND HEADQUARTERS DETACHMENT, ORD- NANCE BATTALION (T/O&E 9-76)

A number of ordnance field maintenance and general supply companies are attached to a headquarters and headquarters detachment, ordnance battalion in the field. Normally two to six ordnance companies may be attached to a battalion headquarters, the number being greater when several of the companies are of the same type and located in the same area. The battalion commander is responsible for the tactical and technical operations of ordnance companies attached to his battalion. Ordnance companies are separate companies and maintain responsibility for their own administration. The battalion headquarters, however, should coordinate the administration of the separate companies when efficiency will result from such action without actually depriving the companies of their ability to operate, if detached suddenly for attachment to another battalion or if required to operate separately.

S3. COMPARISON WITH OTHER UNITS

The ordnance maintenance and general supply battalion headquarters differs from the ordnance ammunition battalion headquarters with respect to the technical qualifications of its personnel. All officers and warrant officers assigned to maintenance and supply duties in this unit must be technically qualified ordnance maintenance officers or ordnance general supply officers. All noncommissioned officers assigned to maintenance and supply duties must be technically qualified in the appropriate ordnance maintenance career field or the ordnance segment of the supply career field, through resident or non-resident training at The Ordnance School or by on-the-job training under qualified instructors.

S4. CAPABILITIES

The headquarters and headquarters detachment, ordnance battalion may be employed in either the combat zone or the communications zone. Its principle characteristic is mobility and this capability may be utilized for the command of a small number of mobile ordnance

companies in support of a rapidly moving tactical command, or the command of a relatively large number of mobile or semimobile ordnance units operating over a wide area.

55. ORGANIZATION

The headquarters and headquarters detachment, ordnance battalion consists of a battalion headquarters, and a headquarters detachment.

56. BATTALION HEADQUARTERS

Several members of the unit staff are charged with additional duties. The executive officer is also the operations and training officer (S3) while the adjutant (S1) performs additional duty as intelligence officer (S2) and as detachment commander of the headquarters detachment. The duties of these staff officers and the members of the special staff are discussed in chapter 1.

a. The maintenance officer is charged with:

- (1) Supervision of the maintenance operations in the attached ordnance maintenance companies and where applicable, the inspection of ordnance equipment in the hands of supported using organizations.
- (2) Supervision of recovery, classification, and evacuation of abandoned ordnance material and captured enemy equipment of similar types, and submission of recommendations for its utilization or disposition.
- (3) Organizing and supervising unit safety councils in attached ordnance companies.
- (4) Inspection to detect unsafe practices and hazards in maintenance operations and initiation of corrective action on-the-spot.

b. The ordnance general supply officer and his assistants supervise ordnance general supply procedures in the battalion. Ordnance depot companies, when attached to ordnance battalions, normally operate their own stock control sections and submit replenishment requisitions directly to the agency responsible for their supply. The ordnance general supply officers' tasks include:

- (1) Arrangements for lateral supply between maintenance companies and an equitable distribution of ordnance general supplies within the ordnance battalion.
- (2) Investigation of all instances where ordnance general supplies are consumed at excessive rates and report of infractions of supply economy to the ordnance battalion commander.

- (3) Insuring adequate supply to supported using units, to divisional ordnance units, and to maintenance companies of the battalion.
- (4) Determination of the supply situation in any maintenance or depot company newly attached to, or preparing to be detached from, the battalion.
- (5) Verification of the supply requirements of organizations withdrawn from combat for the purpose of reconditioning equipment and action to insure that requirements will be met.
- (6) Constant liaison with the ordnance general supply officers of echelons responsible for the replenishment supply of the ordnance depot companies attached to the battalion.

57. HEADQUARTERS DETACHMENT

The headquarters detachment includes the enlisted personnel to assist the battalion commander and his staff in the discharge of their duties.

a. The headquarters and headquarters detachment is normally attached to one of the ordnance companies for food service and provides a cook to augment the food service personnel of the ordnance company to which it is attached.

b. The organic motor transportation will normally be pooled with that of the ordnance company to which the battalion headquarters and headquarters detachment is attached for food service. This company will furnish organizational maintenance service including the dispatching of vehicles. The battalion commander retains the normal responsibility for supervision of organizational maintenance for the headquarters detachment as well as for the attached ordnance companies.

58. OPERATIONS

Ordnance battalion headquarters may be assigned missions on a functional or on an area basis.

a. In the combat zone, it is normal practice to assign missions that are functional in nature. Battalion headquarters may be charged with the command of a number of mobile direct support ordnance companies or with the command of a number of semimobile heavy maintenance companies and depot companies. Other battalion headquarters may be charged with the command of semimobile depots, parks, and collecting points. The employment of ordnance battalion headquarters in the theater of operations is discussed more fully in section II and III of this chapter.

b. In the zone of interior, in the communications zone, and in overseas commands not part of a theater of operations, it is normal to assign battalion headquarters on an area basis. All ordnance companies within such an area may be attached to one battalion headquarters. In the zone of interior and in overseas commands, not part of a theater of operations, this may entail responsibility for the command of ammunition companies, and ammunition specialists will be required in the battalion headquarters.

59. MEDICAL SERVICE

Medical service for units assigned or attached to the battalion is provided on an area basis by appropriate cells of T/O&E 8-500, Medical Service Organization, or other T/O&E or T/D medical installations or units.

60. HEADQUARTERS AND HEADQUARTERS COMPANY, ORDNANCE GROUP (T/O&E 9-12)

A number of ordnance battalions, normally from two to six, are attached to a headquarters and headquarters company, ordnance group in the field. The number of battalions may vary according to the circumstances. When the missions of all battalions are similar and the battalions are located within a limited area, the group headquarters may command more battalions effectively than when missions are dissimilar and distances are great. The group commander is responsible for the tactical and technical operations of the ordnance battalions attached to his group.

61. COMPARISON WITH OTHER UNITS

The ordnance maintenance and general supply group headquarters differs from the ordnance ammunition group headquarters only with respect to the technical qualifications of its personnel. Like the ordnance battalion headquarters, all personnel assigned to maintenance and supply duties in this unit must be technically qualified for such duties.

62. CAPABILITIES

Like the ordnance battalion headquarters, the headquarters and headquarters company, ordnance group may be employed in either the combat zone or the communications zone. It is also a mobile command unit and that characteristic may be utilized either to command a relatively small number of mobile battalions in a rapidly moving situation, or to command a larger number of semimobile

battalions in a dispersed and static situation. The group headquarters interprets the policies and executes the plans of the ordnance staff officer of a major command such as an army or a logistical command.

63. ORGANIZATION

The headquarters and headquarters company, ordnance group consists of a headquarters and a headquarters company.

64. GROUP HEADQUARTERS

The duties of members of the unit staff and the special staff are discussed in chapter I. In order to insure the highest degree of coordination between maintenance and supply activities, an ordnance matériel officer is provided.

a. The ordnance matériel officer coordinates and supervises ordnance maintenance and ordnance general supply in the ordnance group. He submits recommendations on the attachment of ordnance maintenance and general supply companies to battalions, the assignment of missions to battalions, and comments on the technical qualifications of ordnance technical personnel recommended for promotion.

b. The ordnance general supply officer and the maintenance officer function in the same manner as described for their counterparts in the ordnance battalion headquarters. With their assistants, they comprise a group of inspector-instructors available to the ordnance group commander to improve procedures in units attached to the group.

65. HEADQUARTERS COMPANY

The headquarters company includes the enlisted operating personnel to assist the group commander and his staff in the discharge of their duties. The headquarters company accomplishes its own administration. It includes a company headquarters section and sections corresponding to the unit staff.

a. The administrative and personnel section and the communications section consists of personnel who assist the adjutant (S1) in the administration of the group and the operation of the command post.

b. The operations and intelligence section consists of personnel who assist the operations and training officer (S3) and the intelligence officer (S2).

c. The maintenance section and the supply section consists of personnel who assist the maintenance officer and the supply officer, respectively.

66. OPERATIONS

Like the ordnance battalion headquarters the group headquarters may be assigned missions on either a functional or an area basis. The employment of the group headquarters is discussed more fully in sections II and III of this chapter.

67. EQUIPMENT OF THE ORDNANCE BATTALION AND GROUP HEADQUARTERS

The ordnance battalion and group headquarters require no special technical equipment. The personnel of these headquarters supervise the use of special technical equipment within attached ordnance maintenance and supply units. All individuals are armed. The motor transportation authorized the headquarters is adequate if operated as a pool of transportation and if missions are planned and coordinated. Personal assignment of vehicles cannot be tolerated, and it will be necessary for personnel of the headquarters to coordinate their inspection visits to insure the maximum utilization of available motor transportation. The efficiency of the ordnance battalion and group headquarters is dependent upon accurate and rapid communication, and for this they are entirely dependent on the signal service provided by the major command under whose jurisdiction the battalion or group is serving. The teletypewriter provided the ordnance group headquarters is an essential means of transmitting many of the routine stock status reports, and great importance must be attached to obtaining and maintaining an effective link-up with the service afforded by the signal service. An effective system of messengers must be established to overcome the lack of other means of communications in order to insure communications when other means may be interrupted or not available, as well as to conserve transportation.

68. OTHER COMMAND UNITS

a. The ordnance maintenance battalion of an armored division, T/O&E 9-65N, is organized as a fixed strength battalion, organically assigned to the armored division. The command unit of this battalion is the headquarters company organized under T/O&E 9-66N. This organization is discussed in chapter 4 of this manual.

b. The armament rebuild battalion, T/O&E 9-315, and the automotive rebuild battalion, T/O&E 9-325, are fixed strength battalions organized for service in the communications zone. The command unit of these battalions is the headquarters and service company organized under T/O&E 9-316. These organizations are discussed in chapter 8 of this manual.

Section II. EMPLOYMENT OF COMMAND UNITS IN THE COMBAT ZONE

69. GENERAL

a. The contact of ordnance service with the using organization is extremely important and provisions have been made to simplify that contact to a single point for ammunition and another point for both maintenance and supply. A mobile ordnance maintenance unit is organic to each division and provides direct support for the maintenance and supply requirements of all units of the division. Battalion headquarters and attached mobile ordnance maintenance companies of army ordnance service provide a direct support for the maintenance and supply requirements of nondivisional units in the combat zone. Divisional ordnance maintenance units and the battalions of army ordnance service charged with providing direct support of using organizations are referred to as direct support ordnance units.

b. The direct support ordnance units are supported by semimobile heavy maintenance companies and depot companies. The heavy maintenance companies accept overflow work from direct support units and accomplish work requiring more extensive shop equipment. The depot companies provide a reserve of ordnance general supply, especially fast moving parts and heavy assemblies. Ordnance battalions consisting of heavy maintenance companies and depot companies are referred to as heavy support battalions.

c. Each using organization, whether it be division or nondivisional receives direct support from a single ordnance company. Each direct support ordnance unit is supported by a heavy support ordnance battalion.

d. Further to the rear, additional ordnance battalions are organized for specific general support missions, such as operation of the Army Ordnance Supply Depot, the Army Artillery and Vehicle Park, the Army Ordnance Rehabilitation Point, and the Army Ordnance Collecting Point.

e. Ordnance service in the field army is normally organized in four ordnance groups (fig. 1). For discussion purposes these groups are designated the first, second, third and fourth ordnance groups. The first ordnance group is concerned with the supply of ammunition and is discussed in FM 9-6. The second, third and fourth ordnance groups are concerned with ordnance maintenance and general supply and are covered in this section.

70. SECOND ORDNANCE GROUP

a. One headquarters and headquarters company, ordnance group; six headquarters and headquarters detachments, ordnance battalion;

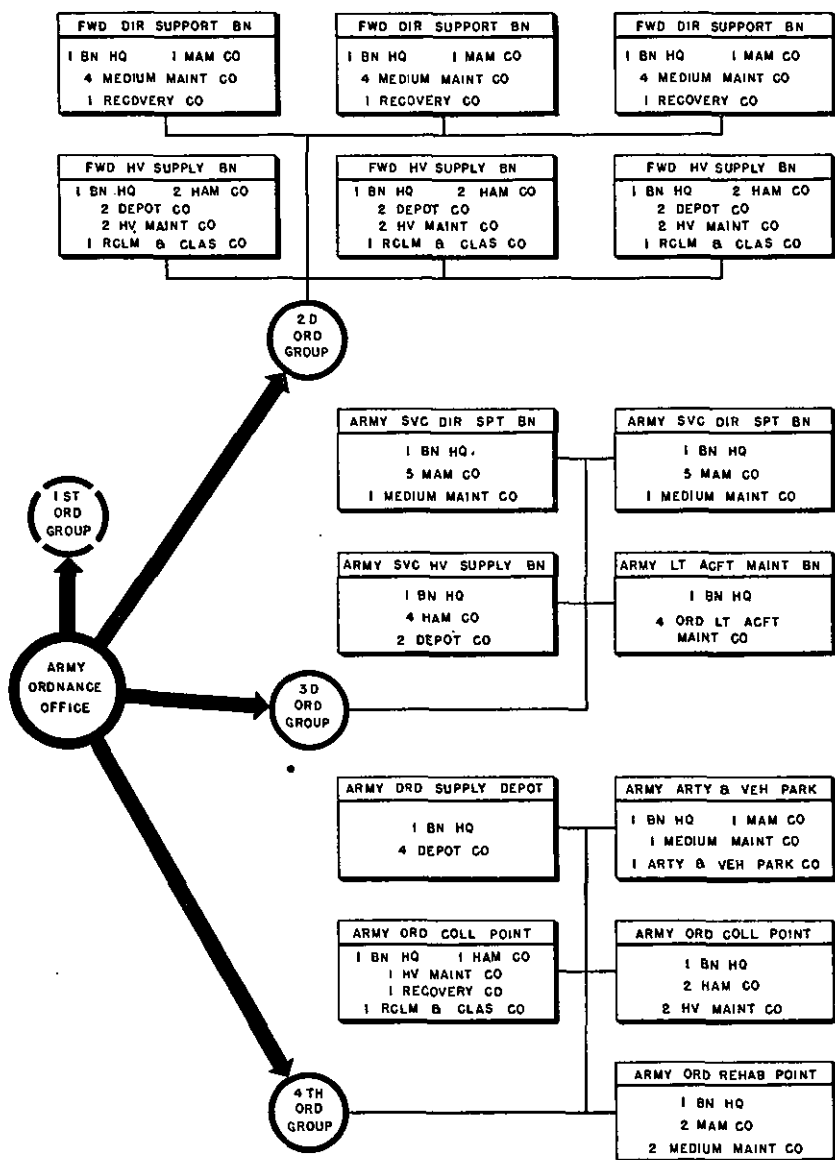


Figure 1. Ordnance support for the field army.

and a number of attached ordnance companies comprise the second ordnance group. The group is responsible for providing direct support for corps troops and for assisting the ordnance maintenance companies of the infantry and airborne divisions.

b. One forward direct support battalion is assigned the mission of providing direct support for each corps. The forward direct support battalion consists of one headquarters and headquarters detach-

ment, ordnance battalion; four medium maintenance companies; one medium automotive maintenance company; and one recovery company. The medium automotive maintenance company provides direct support for the service units of corps troops. The recovery company augments the battlefield recovery facilities of combat units as required, and evacuates ordnance matériel, and captured enemy matériel of similar types, to ordnance collecting points.

c. One forward heavy support battalion supports each forward direct support ordnance battalion. The forward heavy support ordnance battalion consists of: one headquarters and headquarters detachment, ordnance battalion; two heavy maintenance companies; two heavy automotive maintenance companies; two depot companies; and one reclamation and classification company.

- (1) The heavy maintenance companies and the heavy automotive maintenance companies support the divisional ordnance maintenance units of the infantry, airborne, and armored divisions, and the maintenance companies of the forward direct support battalion, by accepting overflow work and work requiring extensive shop equipment. The purpose of heavy maintenance companies and heavy automotive maintenance companies, well forward in the combat zone, is to insure the maximum repair of ordnance equipment without the loss of time which would otherwise be experienced if evacuation further to the rear were required in all cases.
- (2) The ordnance depot companies carry approximately 15 days supply of fast-moving spare parts and heavy assemblies. Care must be exercised in assigning missions to ordnance depot companies of the forward heavy support battalion in order to prorate the weapons and vehicles to be supported equitably between the two companies and to prevent pyramiding of supply requirements.
- (3) The reclamation and classification company operates the ordnance collecting point behind each corps and receives, classifies, and segregates ordnance and captured enemy matériel of similar types turned in to ordnance collecting points.

71. THIRD ORDNANCE GROUP

a. One headquarters and headquarters company, ordnance group; four headquarters and headquarters detachments, ordnance battalion; and a number of attached ordnance companies are organized as the third ordnance group. This group is responsible for the field maintenance of units located in or passing through the army service area and for the field maintenance of army aircraft.

b. Two army service direct support battalions provide direct sup-

port for army troops. Each battalion consists of one headquarters and headquarters detachment, ordnance battalion; five medium automotive maintenance companies; and one medium maintenance company. The entire army service area is divided between these two direct support ordnance battalions.

c. One army service heavy support battalion supports the two army service direct support battalions. This battalion consists of—one headquarters and headquarters detachment, ordnance battalion; four heavy automotive maintenance companies; and two depot companies.

d. Four light aircraft maintenance companies and one headquarters and headquarters detachment, ordnance battalion are required for the inspection of organizational maintenance of army aviation, the replenishment of army aviation spare parts and supplies consumed in organizational and field maintenance, and the field maintenance of army aircraft. One light aircraft maintenance company is located near each corps air-strip and at the army air-strip. The difference is that army aviation inspection procedures and maintenance cycles precludes any mixing of army aviation technical skills with armament or vehicles maintenance personnel and a distinct organizational structure is preserved.

72. FOURTH ORDNANCE GROUP

a. One headquarters and headquarters company, ordnance group; five headquarters and headquarters detachments, ordnance battalion; and a number of attached ordnance companies comprise the fourth ordnance group. This group provides general support for the field army.

b. The army ordnance supply depot consists of one headquarters and headquarters detachment, ordnance battalion, and four ordnance depot companies. This battalion is the port of entry for ordnance general supplies, except for towed artillery vehicles and army aircraft.

c. The army ordnance artillery and vehicle park consists of one headquarters and headquarters detachment, ordnance battalion, one artillery and vehicle park company, one medium maintenance company, and one medium automotive maintenance company. This battalion is responsible for the receipt, inspection, and servicing of towed artillery and vehicles required by the army for replacement purposes.

d. The army ordnance rehabilitation point consists of one headquarters and headquarters detachment, ordnance battalion, two medium maintenance companies; and two medium automotive maintenance companies. This battalion rehabilitates the ordnance equipment of organizations withdrawn from combat for this purpose and

may be dispatched to any part of the army area where its services are required.

e. The army ordnance collecting point consists of two battalions of heavy maintenance companies to inspect, classify, repair, or reclaim unserviceable ordnance major items, assemblies, subassemblies, and parts, as well as captured enemy matériel of similar types generated in the combat zone. Two headquarters and headquarters detachments, ordnance battalion; three heavy maintenance companies; three heavy automotive maintenance companies; one reclamation and classification company; and one recovery company constitute two army heavy maintenance battalions for this purpose.

Section III. EMPLOYMENT OF COMMAND UNITS IN THE COMMUNICATIONS ZONE

73. GENERAL

Ordnance service in the communication zone is performed generally by separate companies except that the fifth echelon rebuild shops are operated by ordnance battalions with companies organic thereto, specifically designed for the purpose. The separate companies are organized into battalions by attachment of two or more companies to a Battalion Headquarters and Headquarters Detachment, T/O&E 9-76. Ordnance battalions are in turn combined, two or more to a group, by attachment to a Group Headquarters and Headquarters Company, T/O&E 9-12. No organization is provided for the administration of two or more groups. The ordnance staff officer must deal with each group separately or improvise a single means for their administration.

74. LOCATION OF UNITS

Different factors affect the location of the various kinds of units in the communications zone. Rebuild shops are semi-permanent installations that are hard to move. They are established well behind the forward boundary where the best facilities can be found. Certain depots must be located near ports to receive supplies while other depots are located well forward for issue of supplies to the combat zone. Field maintenance shops must be distributed throughout the zone according to the vehicle density of units operating in the zone, and must be moved as the distribution of vehicles changes. These and other considerations affect the location and frequency of movement of the more specialized units. Rarely will an ordnance unit in the communications zone be assigned to continued support of any specific organization as is the case in the combat zone. It follows

that certain units must remain in fixed locations regardless of any movement of the administrative headquarters to which attached, and also that other types of units may move frequently from one area to another regardless of the location of the headquarters to which assigned.

75. GEOGRAPHICAL BASIS OF ATTACHMENT

a. Companies are grouped into battalions and battalions into groups on a geographical basis. A large degree of functional organization can be attained in battalions but this is generally impossible in groups (except in the ammunition service as set forth in FM 9-6).

b. Depot companies are usually grouped together under a battalion headquarters for the operation of large supply installations. Infrequently another type unit may be attached to the same battalion because of its remoteness from any other suitable headquarters. Similarly an isolated depot company might be attached to a battalion primarily responsible for maintenance. Park, distribution, and assembly companies commonly work together under the same headquarters, but usually one or more nearby companies of another type are also administered by the same unit. Maintenance companies are numerous and are generally grouped together. Other companies which are employed in small numbers and usually far from each other (e.g. collecting point units) are attached to the most suitable nearby battalion (including rebuild battalions). Battalion headquarters are provided on the basis of one per four to six companies and are distributed throughout the zone on that basis for the administration of the most suitable nearby units. As companies move from one battalion area to another they are reassigned accordingly. It is common for a headquarters to lose units and acquire new ones frequently as the zone builds up or expands forward. Battalion headquarters are moved as the overall distribution pattern of the companies changes.

c. Group headquarters are few and normally are not on an organized functional basis. In a narrow, deep communications zone employing two groups, one would be located in the forward area for the administration of the battalions located there, while the other further back would be responsible for the remainder. In a broad shallow zone one would be at each flank. In a larger zone with several groups, they would be similarly distributed on a purely geographical basis. (A third group concerned with supply of ammunition is discussed in FM 9-6.)

d. The Ordnance Office is located at the communications zone (or

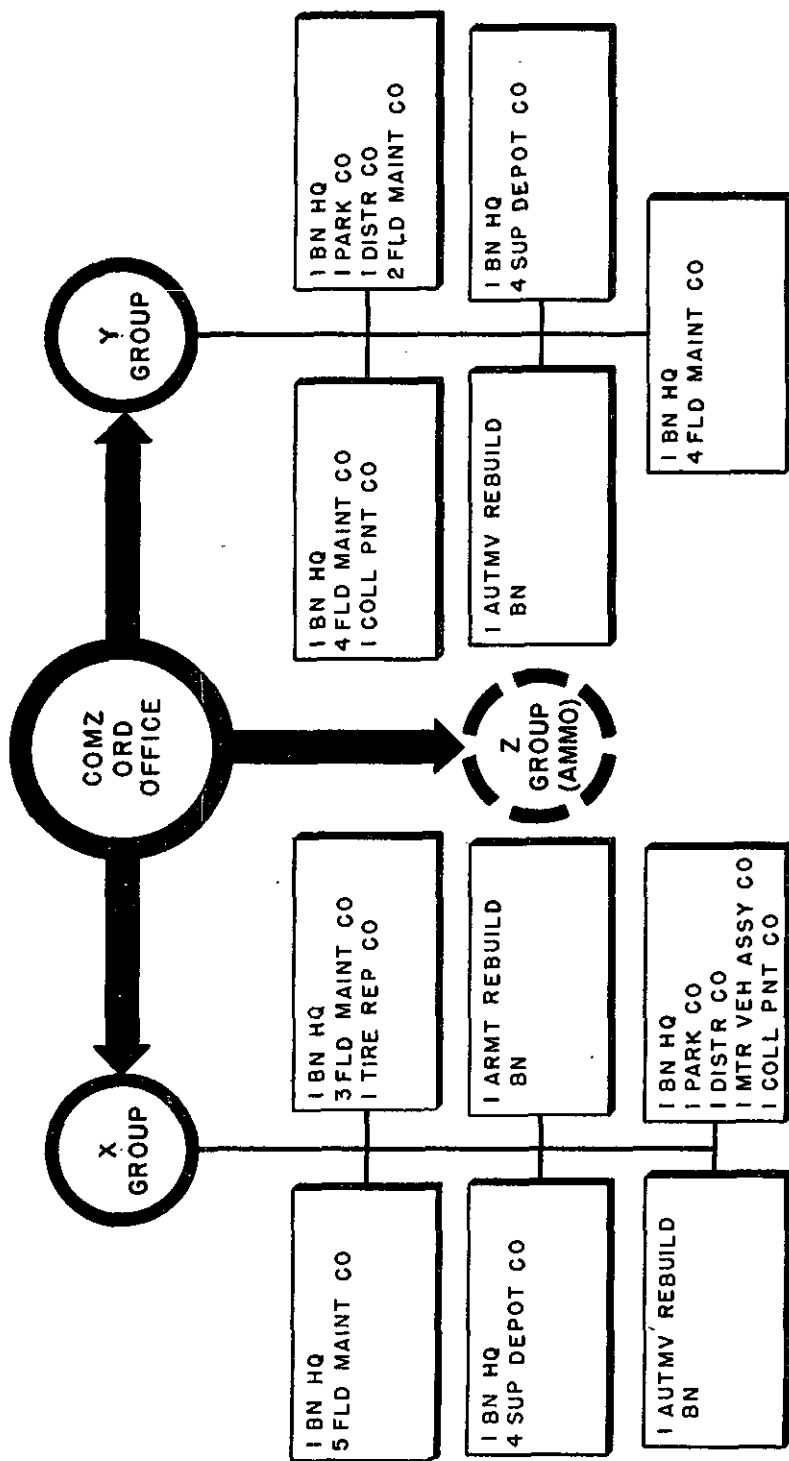


Figure 2. Communications zone ordnance service. (This is not a balanced ordnance service. It is merely indicative of how attachments of units may be made to battalion and group headquarters based on location.)

section) headquarters which may be at any point determined by higher authority.

e. Figure 2 illustrates how various units might be assigned. It is purely illustrative of assignment possibilities and possible distribution of units but does not represent a balanced organization. In its vertical position the figure represents a deep zone; in a horizontal position it depicts equally well a broad, shallow zone.

PART TWO

ORDNANCE MAINTENANCE AND GENERAL SUPPLY IN THE COMBAT ZONE

CHAPTER 4

MAINTENANCE

Section I. ORGANIZATIONAL MAINTENANCE

76. SCOPE OF ORGANIZATIONAL MAINTENANCE

The preventive maintenance services required to be performed by the operator or crew and by specially trained mechanics within the using organization are fully described in the appropriate technical manual of the 9-200 to 9-999 series, and field manuals of the 23 series.

a. Small Arms. The preventive maintenance services performed by personnel of the using organization on small arms and automatic weapons generally consist of—

- (1) Operational inspection for loose or broken components, bends, dents, obstructions in the bore, functional defects, damage or deterioration of painted, blued, or machined surfaces, and incomplete or unserviceable accessories, tools, spare parts, and equipment.
- (2) Common preventive maintenance services such as the removal of rust, cleaning and lubrication of bearings and sliding surfaces, tightening loose parts and replacing broken parts. Periodic checks will be made to see that all modifications have been applied. A list of current modification work orders is published in SR 310-20-4.
- (3) Scheduled preventive maintenance services as listed in the appropriate TM of the 9-200 through 9-999 series or field manuals of the 23 series. These services normally consist of cleaning, lubricating, checking for erosion and burrs, and testing the functioning of the accessories, components, and parts periodically, as specified in the preventive maintenance schedules.

b. Artillery. The preventive maintenance services performed by personnel of the using organization on artillery are described in the appropriate TM of the 9-200 through 9-999 series and normally consist of—

- (1) Common preventive maintenance services similar to those described in *a* above.
- (2) Scheduled preventive maintenance services performed by the crew, consisting of cleaning, lubricating, inspecting, and testing the functioning of the accessories, components, equipment, and parts before firing, during firing, after firing, weekly, monthly or before traveling.
- (3) Scheduled preventive maintenance service performed by the battery mechanic consisting of authorized disassembly, maintenance, or adjustments pertaining to the wheel bearings, recoil mechanism, and the equilibrator. The battery artillery mechanic also makes a systematic check to see that all crew maintenance has been performed at the prescribed intervals.

c. Instruments. The preventive maintenance services performed by personnel of the using organization on fire control instruments are described in the appropriate TM of the 9-200 through 9-999 series. The facilities, equipment, and skill required for disassembling, assembling, and adjusting fire control instruments are such as to make it impractical to perform preventative maintenance services involving these operations, with the exception of minor external adjustments, in the using organization. Thus, the preventive maintenance service performed on fire control instruments by personnel of the using organization is limited to that performed by the operator and consists generally of cleaning lenses and external surfaces, lubrication, tightening external screws and nuts, testing and functioning, minor adjustments, checking accuracy, and replacing items such as cables and lamps.

d. Vehicles. Preventive maintenance services performed by personnel of using organizations on ordnance general purpose and combat vehicles are described in TM 9-2810, TM 38-660, and in technical manuals of the 9-200 through 9-999 series. TM 9-2810 applies to vehicles generally and every organization must thoroughly school its personnel in performing the preventive maintenance services set forth in the appropriate technical manual of the 9-200 through 9-999 series even though they are not listed in TM 9-2810 or T M38-660. Preventive maintenance services performed by the personnel of the using organization are as follows:

- (1) The driver, or crew, preventive maintenance services consist generally of replenishing fuel, oil, grease, water, air, and battery liquid; cleaning the vehicle and tightening loose nuts and bolts; making emergency repairs as needed; checking oil and lubricant levels; inspecting and checking all accessories, components, and equipment; and finally reporting the results of the servicing to the section leader or other designated

individual. The driver, or crew, also performs preventive maintenance services on the vehicle armament. These services are listed in the technical manuals of the 9-200 through 9-999 series pertaining to the vehicle and are similar in scope to those pertaining to small arms and artillery described above.

- (2) Organizational mechanic or maintenance crew preventive maintenance services consist of the performance of scheduled services as described in the appropriate technical manual of the 9-200 through 9-999 series, the replacement of authorized parts, and adjustments made with authorized tools and equipment. The scheduled preventive maintenance services generally include road tests; inspection and testing of components, accessories, and parts; lubrication; and tightening loose nuts and bolts.

e. Army Aircraft. Preventive maintenance services performed by personnel of using organizations on army aircraft are described in the applicable technical order of the 01 series. Preventive maintenance services on army aircraft consist of preflight, afterflight, and daily inspections; and inspections made after a specified number of hours of operation. As a result of the inspection, organization personnel adjust, repair, or replace components, accessories, and parts, as authorized and within their capabilities with respect to skills, tools, equipment, and time available.

77. PERSONNEL

a. General. The responsibility for the adequate performance of preventive maintenance services on ordnance equipment by personnel of the using unit rests with the unit commander. To assist the commander in the discharge of his responsibilities, technically qualified personnel are assigned to the unit. This personnel includes the armorers, artillery mechanics, automotive mechanics, motor officers, motor sergeants, maintenance specialists, army airplane and engine mechanics, and helicopter mechanics. The echelon at which the above personnel are assigned is directly dependent on the amount of ordnance equipment authorized and the mission of the organization. Automotive mechanics are not authorized in rifle companies even though they are organic to tank or truck companies. Automotive mechanics are assigned to the infantry battalion headquarters and the service company of the infantry regiment.

b. The Unit Armorer. The armorer normally operates at the company, battery, or similar unit level, and small arms evacuated by the company, battery, or similar unit to the ordnance maintenance unit are processed through the battalion and regimental S 4's without any

further action by organizational maintenance personnel at those levels. The armorer performs preventive maintenance services on all small arms stored in the company and not in the hands of the troops; checks weapons received in the company for serviceability prior to issue; makes minor repairs to weapons as necessary; maintains a stock of organizational spare parts and equipment; notifies the supply sergeant of the items needed by type and quantity; maintains the file of locator and inventory control cards, WD AGO Form 9-71; in garrison, maintains serial number file (not used in combat); assists in command inspections; and prepares work requests for weapons to be evacuated to ordnance maintenance units. The armorer is normally located with the company supply sergeant, both in garrison and in combat, and is required to be present during range practice. In combat, the location of the armorer will be in the forward area, normally at the company supply point. Weapons may be brought to the supply point for repair or the armorer may be called on to make repairs in place.

c. The Artillery Mechanic.

- (1) *In artillery units.* The artillery mechanic in artillery units is assigned to the headquarters of the firing battery and operates under the supervision and direction of the battery executive officer. In combat, artillery weapons that cannot be repaired by the artillery mechanic are repaired in place by ordnance contact parties or in the event evacuation to ordnance shops is necessary, a replacement is furnished the firing battery. Artillery mechanics are not assigned at the battalion or group level. The artillery mechanic also performs the duties of the armorer with respect to small arms (par. *b* above) for the firing battery. The artillery mechanic assists in the performance of command inspections; checks and assists the operating crew in discharging responsibilities; normally performs or supervises all authorized disassembly, assembly, maintenance, or adjustments pertaining to the wheel bearings, recoil mechanism, and the equilibrator; and checks to insure that each gun or howitzer section maintains its stock of organizational spare parts and equipment at authorized levels. During combat, the artillery mechanic is immediately available to the gun or howitzer section chief since he is located with the firing battery headquarters, which has direct supervision over these sections.
- (2) *In armored units.* Artillery mechanics are provided in armored units up to and including the battalion level. The artillery mechanic in armored units is also qualified and performs the duties of an armorer with respect to small

arms (par. *b* above.) Each armored company headquarters has a maintenance section, which includes an artillery mechanic, to perform preventive maintenance services for the company. In addition to the foregoing, artillery mechanics are assigned to the maintenance platoon of battalion headquarters and service company. The duties of the artillery mechanics in armored units are similar to those described in paragraph (1) above. The artillery mechanic in armored units is supervised by the motor officer (executive officer) assisted by the motor sergeant. During combat, the artillery mechanic remains with the combat echelon of the organization.

d. Automotive Mechanics.

- (1) In regiments and battalions or similar units of fixed composition, second echelon automotive maintenance is divided, part being done by organizational maintenance sections of companies and the balance by organizational maintenance platoons of the regimental or battalion headquarters or service company. This results in the assignment of a minimum number of automotive mechanics to companies and the consolidation of others in the organizational maintenance section or platoon of regimental or battalion headquarters or service company. Separate companies, however, are provided with sufficient automotive mechanics to accomplish all organizational maintenance on motor vehicles within the company. Officers, warrant officers, and noncommissioned officers are assigned as organizational motor officers and non-commissioned officers, to assist unit commanders in discharging their responsibility for the organizational maintenance of automotive equipment and to administer the organizational maintenance of automotive equipment.
- (2) The regimental or group and battalion motor officers exercise technical supervision of maintenance in their organizations; advise their commanders concerning transportation; assist in the operation of transportation under regimental or battalion control; insure that maintenance facilities are employed so as to keep the maximum number of vehicles in operation at all times; maintain liaison with higher levels of maintenance; supervise the training of mechanics and drivers; and supervise recovery and evacuation of vehicles from battlefield. For a detailed description of the duties of motor officers at various echelons, see FM 25-10.
- (3) The company or battery motor officer supervises the maintenance section; insures that prescribed records, reports, and forms are kept; conducts frequent spot checks and in-

spections to determine that the preventive maintenance services are adequate; conducts training for drivers and mechanics; advises the company commander on transportation matters; organizes defense of the motor vehicle park; and maintains liaison with the battalion motor officer.

- (4) The motor sergeant is the principal enlisted assistant of the motor officer. The motor sergeant, or maintenance specialist, in the case of truck companies, supervises and trains the mechanics; supervises the initial and final inspection of maintenance work; keeps prescribed records (TM 9-2810); and makes reports on scheduled preventive maintenance. In the field or during marches, he may supervise the recovery of disabled vehicles.
- (5) Organizational automotive mechanics are assigned to military organizations based on the number of vehicles to be maintained. The automotive mechanic makes necessary repairs and adjustments under the direction of the motor sergeant or maintenance specialist; performs scheduled preventive maintenance services as listed in the appropriate technical manual of the 9-200 through 9-999 series; observes vehicles during the march for probable failures or defects; instructs and assists operators in performing preventive maintenance services when directed to do so; and assists in performing command inspections.
- (6) When units are located at installations; in the zone of interior; or in military communities overseas; commanding officers often pool motor transportation administratively, if physical location of vehicles make such pooling feasible. When vehicles are pooled physically, a community motor pool is established and an organizational maintenance section improvised. This may be accomplished by placing personnel of organizational maintenance sections on special duty with the motor pool; or by assigning the responsibility for operating the motor pool to one unit and augmenting its organizational maintenance section with qualified personnel on a special duty basis; or by the employment of indigenous civilian labor.
- (7) Numerous small detachments, organized without adequate organizational maintenance personnel, may be encountered. These must be attached to a larger unit or to a motor pool of organizational maintenance.

e. Army Aircraft Mechanics. The senior army airplane and engine mechanic conducts inspections and maintains records as prescribed in Air Forces Technical Order 00-20A; supervises the preparation and maintenance of landing fields; assists pilots in recon-

naissance for landing strips; assists pilots in completing necessary forms and records; supervises preventive maintenance services on vehicles, radios, weapons and all equipment assigned to the air section; supervises the activity of all enlisted personnel assigned to the air section; assists in command inspections; and maintains the stock of organizational spare parts and equipment at authorized levels. A number of army airplane and engine mechanics and other specialists are assigned to assist the senior mechanic, based on the amount of equipment authorized for the unit.

78. TOOLS AND EQUIPMENT

Organizational tools and equipment necessary for use in performing preventive maintenance services on ordnance equipment are provided using organizations as authorized in appropriate tables of equipment, tables of allowances, and the (ORD 7) section of the Department of the Army Supply Catalog. Special tools and equipment required for the performance of preventive maintenance services on ordnance equipment are also listed in the appropriate technical manuals of the 9-200 through 9-999 series. The common tools and equipment that are applicable to a relatively large range of repair operations are grouped in sets and the authorization for supply is indicated in equipment authorization tables. Special tools and equipment peculiar to a major item are listed in the (ORD 7) section of the Department of the Army Supply Catalog. The basis of issue is also indicated in this section of the catalog.

79. SPARE PARTS AND SUPPLIES

The (ORD 7) section of the Department of the Army Supply Catalog lists the quantities of equipment and spare parts which are issued to the using arm or service for operation of the matériel and for performing organizational maintenance of an ordnance major item. The allowance of spare parts contained in the above publications is the quantity which the using unit is authorized to have on hand and on order. In battalions and regiments, the quantity of spare parts authorized to the entire organization is that quantity corresponding to the number of major items actually on hand in the organization. Each major item is counted once and allowances for companies and higher headquarters should not be pyramided by counting the same major item more than once.

80. REPLENISHMENT SUPPLY

a. Replenishment supply channels normally parallel command channels up to and including the regiment. Requests originating with the organizational maintenance mechanics are processed through and

consolidated by the company, battalion, and regimental or similar unit supply officer, and submitted to a designated ordnance maintenance company. Ordnance contact parties are authorized to accept requisitions and to furnish items requested when possible.

b. The methods utilized in submitting requests for supplies are as follows:

- (1) *Exchange.* Unserviceable but recoverable items are tagged (DA AGO Form 9-81) and turned in to the ordnance maintenance company in exchange for a serviceable like item. No other formality is required; the unserviceable but recoverable item, properly tagged, serves as a requisition and basis for replenishment.
- (2) *Requisition.* When exchange is not practical, such as in the case of nonrecoverable items, the using organization will obtain replenishment supply by submitting WD AGO Form 446 (Property issue slip) to the designated ordnance maintenance company. This form is prepared in duplicate so that a copy may be returned to the organization submitting the request showing the action taken. Separate issue slips should be prepared for items within each single SNL subgroup to simplify and expedite the issue from the various storage groups. WD AGO Form 446 is prepared and processed as indicated in TM 38-403. As a minimum, the organization submitting the request must establish the identity of the item requested, giving the necessary details of nomenclature, stock number, or parts number. Each request should contain information as to the quantity on hand and due-in.
- (3) *Informal requisitions:* In emergencies, designated ordnance maintenance units will furnish using organizations supplies requested on informal or oral request. In such cases WD AGO Form 446 will be provided as soon as practicable.

81. COMMAND INSPECTIONS

a. Periodic inspections of equipment will be conducted by all commanders as a part of the process of maintaining a high standard of training and discipline within each unit and organization. The frequency of inspection will be determined by the individual commander concerned. The purpose of command inspections is to insure the correct utilization of equipment, supply economy, and compliance with organizational maintenance principles as set forth in pertinent Department of the Army publications.

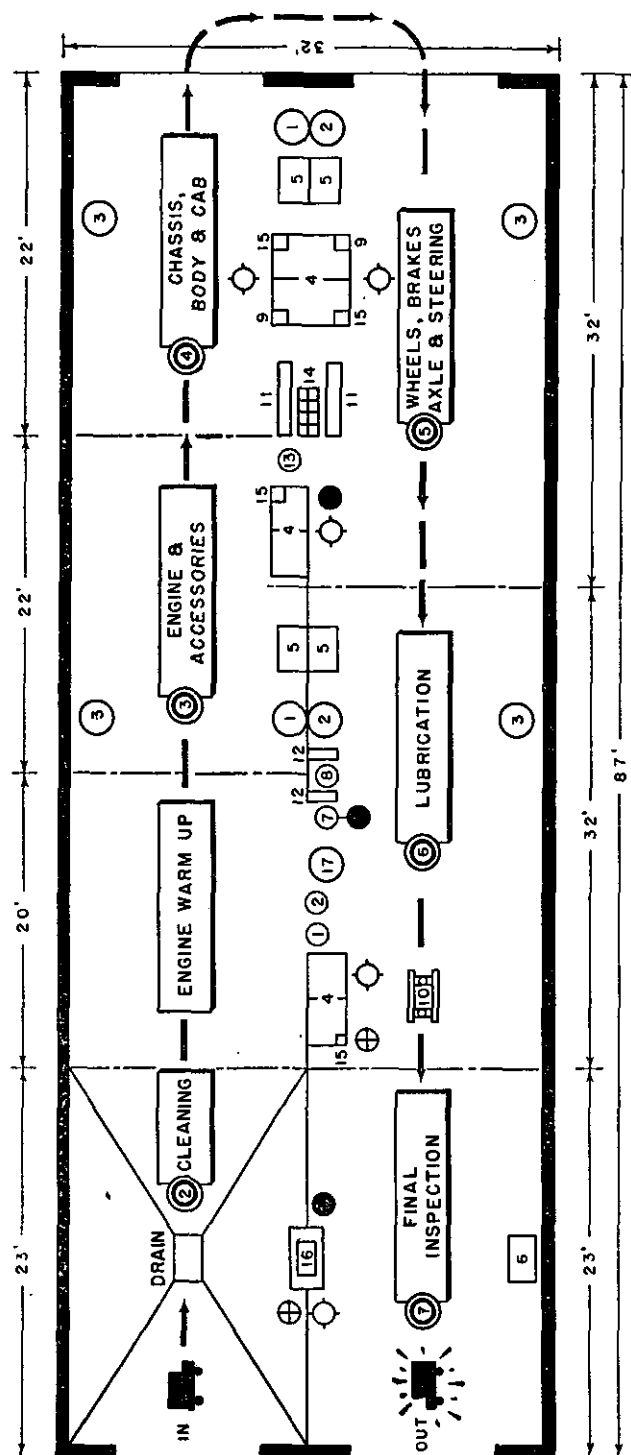
b. Since command inspections are not technical in nature and are not necessarily routine, they do not take the place of preventive

maintenance services, spot-check, and technical inspections. During a command inspection, it is possible to determine the efficiency of personnel training, the adequacy of the maintenance and operation policy of the unit, and the extent to which that policy is being followed. These inspections bring to light any need for change of policy or methods of instruction, or the need for any additional instruction. Finally, the commander can observe the presence and condition of tools and accessories, and the ability of the equipment to perform its tactical or service mission.

c. The commander will normally conduct formal command inspections periodically. In the case of formal command inspections, prior notice is normally given the unit to be inspected and instructions are issued for the display of equipment and the method of conducting the inspection. Informal command inspections are made by commanders at any opportune time, usually without prior notice. Informal inspections should be made whenever and wherever the opportunity arises. Very often the informal command inspection may be of greater value than the formal inspection by providing an indication of the actual condition of the equipment during operation and of the proficiency of the operating personnel.

d. Commanders of detachments, companies, battalions, regiments, and similar units conduct command inspections in person with the assistance of organizational maintenance officers and mechanics. Commanders of divisions and larger organizations normally utilize the spot check inspection or the technical inspection, performed under the direction of a member of the staff and personnel of the technical service concerned. These inspections are discussed in detail in Chapter 11 of this manual. Division and larger organization commanders also conduct informal command inspections as the opportunity presents itself. Formal command inspections of all units in the command should be conducted by company and smaller unit commanders at least once a week, and by battalion and regimental or group commanders at least once a month.

e. Check lists should be prepared for use in command inspections. These check lists may consist of the forms utilized for the command spot-check inspection or technical inspection (Chapter 11) altered to include the preventive maintenance services as listed in the appropriate technical manual of the 9-200 through 9-999 series. Adequacy of supply procedures and the stock of organizational spare parts and equipment will also be checked, and deficiencies should be recorded. Upon completion of the inspection, results should be recorded and studied to determine what corrective action is required. This information serves as the basis for conclusions as to the over-all operating condition in the organization. Steps should be taken by the commanding officer to insure that deficiencies are corrected, and that the main-



CODE

⊕ AIR OUTLETS

● WATER OUTLETS

⊙ ELECTRICAL OUTLETS

② STATION NUMBERS

→ PRODUCTION LINE

NOTES

1.— SEE FIGURE 4b FOR KEY

2.— STATION NO.1 IS ROAD TEST

Figure 3. Work space and layout for single line, production line maintenance.

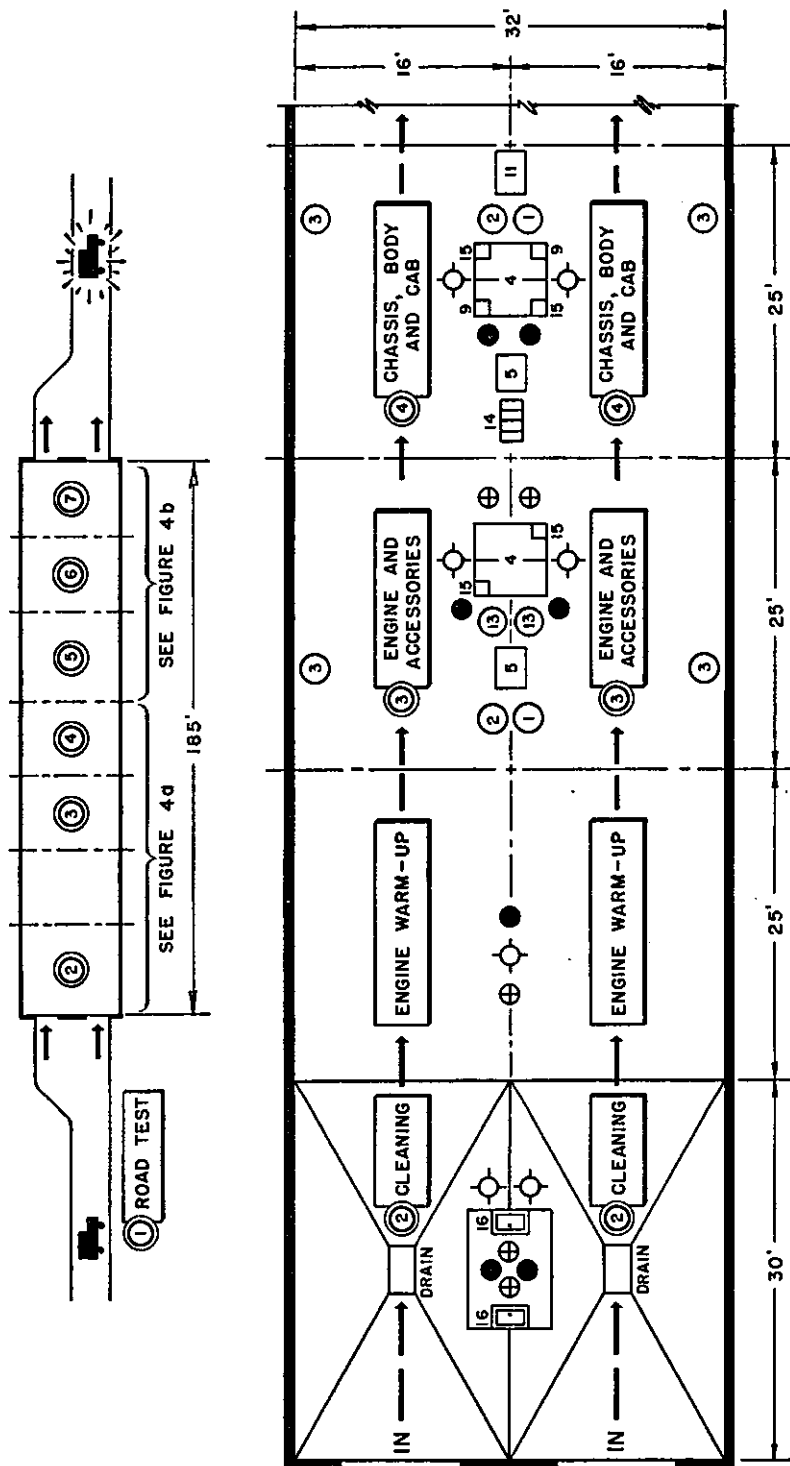
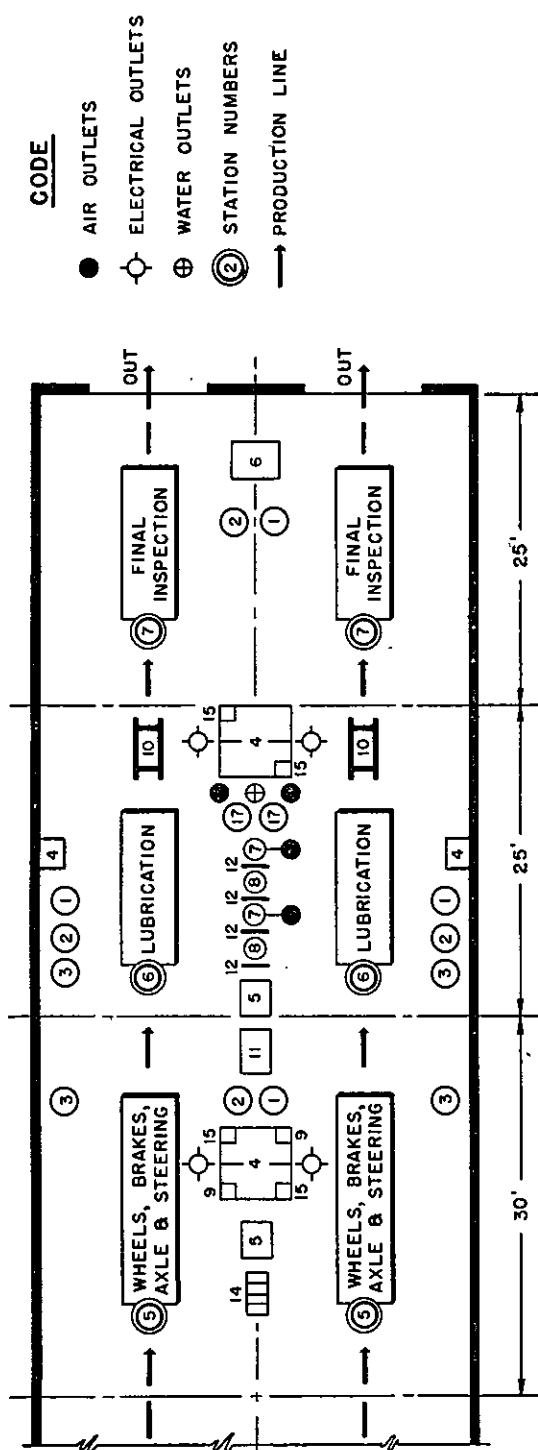


Figure 4a. Work space and layout for double line, production line maintenance.



KEY FOR FIGURES No. 3, 4a AND 4b

- | | | |
|-------------------------|--|---|
| 1. CAN, CLEAN RAGS | 7. GUN, LUBRICATING, AIR OPERATED | 13. CLEANER, SPARK PLUG |
| 2. CAN, DIRTY RAGS | 8. GUN, LUBRICATING, HAND OPERATED | 14. TRESTLE, AXLE TYPE, ADJUSTABLE, 5 TON |
| 3. CAN, RUBBISH | 9. GRINDER, BENCH, ELECTRIC | 15. VISE, 4 INCH JAW |
| 4. CABINET, W/BENCH TOP | 10. LIFT, PNEUMATIC, TRUCK TYPE, TWIN POST | 16. WASHER |
| 5. COMPRESSOR, AIR | 11. JACK, 10 TON, HYDRAULIC | 17. PUMP, OIL BARREL |
| 6. DESK, OFFICE | 12. REEL, LUBRICATION HOSE | |

Figure 4b. Work space and layout for double line, production line maintenance.

tenance and operation of the ordnance equipment within the unit conform with current regulations and standard practices.

82. PRODUCTION LINE MAINTENANCE

a. Production line maintenance may be used to advantage when a large number of vehicles, such as vehicles assigned to a consolidated motor pool, can be released for maintenance services at scheduled intervals. The organization of production line maintenance is designed to accomplish the required second echelon of maintenance services with a minimum amount of trained personnel. Through specialization of personnel, the required services can be accomplished with approximately half the skilled personnel that would otherwise be required.

b. A production line maintenance system is normally organized into seven work stations. They are as follows:

- (1) Station Number 1, road test.
- (2) Station Number 2, cleaning and engine warm-up.
- (3) Station Number 3, engine and accessories.
- (4) Station Number 4, chassis, body, and cab.
- (5) Station Number 5, wheel, brakes, axles, and steering.
- (6) Station Number 6, lubrication.
- (7) Station Number 7, final inspection.

c. At each of these work stations, a specific group of maintenance services is accomplished by personnel assigned to the station.

d. With experience, ten or more vehicles per day may be serviced through a single line of a production line maintenance system. Additional lines may be established depending upon the number of vehicles to be serviced. Typical layout for a single line production line maintenance system is indicated in figure 3. A typical layout for a double line in a production line maintenance system is shown in figures 4a and 4b. The dimensions of buildings and work stations, and the approximate location of station equipment must conform to available facilities. When sufficient working space is not available in one building, more than one building or area may be used.

e. The minimum personnel considered essential for the operation and administration of a single line, one-shift, production line maintenance shop are as follows:

- One (1) Chief Mechanic.
- One (1) Clerk.
- Eight (8) Mechanics, automotive.
- Seven (7) Mechanics' helpers.

A mechanic is assigned to each station except Station Number 2.

f. Fifteen men are normally required to man the work stations during a 6,000 mile or semiannual service, but during the 1,000 mile or

bimonthly service, only nine men are required. The remaining six men, not required for 1,000 mile or bimonthly service, are freed for extra work that may accumulate along the production line maintenance shop line. This personnel is in addition to the supply clerk that operates the stock room and the shop superintendent who has overall supervision over the work in progress. The number of vehicles operated by the pool will determine whether a single, double, or triple line must be established and whether it will be necessary to operate more than one shift. Maintenance services performed are those listed on WD AGO Form 461-3.

g. Station Number 1 consists of the route selected for the road test. This route should permit the mechanic to stop the vehicle for work without interfering with other traffic, should such action be necessary. The route selected must permit a thorough road test as outlined in TM 9-2810 or the appropriate technical manual of the 9-200 through 9-999 series.

h. Station Number 2, cleaning and engine warm-up, is manned by one mechanic's helper, and may be located either inside or outside a building, as local conditions require. At this station, the vehicle is thoroughly cleaned; grease and dirt are removed from the exterior of the engine; and the batteries and battery carrier are washed. If the battery carrier is corroded, that fact is noted on the work sheet. The interior and exterior of the vehicle is thoroughly cleaned, including all glass. After the vehicle is cleaned, it is moved to the engine warm-up area where the engine is operated at 600 to 800 RPM until it attains normal operating temperature.

i. Station Number 3, engine and accessories, is manned by a mechanic and one mechanic's helper. Services performed are those listed under engine and accessories on WD AGO Form 461-3.

j. Station Number 4, body, chassis, and cab, is manned by one mechanic and three mechanic's helpers for the 6,000 mile or semi-annual service and one mechanic for the 1,000 mile or bimonthly service.

k. Station Number 5, wheels, brakes, axles, and steering, is manned by one mechanic and one mechanic's helper.

l. Station Number 6, lubrication, is manned by one mechanic for 1,000 mile or bimonthly services; and one mechanic and a helper for the 6,000 mile or semiannual services. At this station, the vehicle is lubricated as indicated in the applicable WD Lubrication Order.

m. Station Number 7, final inspection, is manned by one mechanic who is responsible that inspection standards are met.

83. MARCH MAINTENANCE

A unit marching by motor transportation is accompanied by its organizational maintenance section or platoon. This section marches

at the tail of the column or detachments march at the tail of each serial. Wreckers should be provided with each detachment. Disabled vehicles are inspected and the difficulty is diagnosed by qualified mechanics. If repairs can be effected in a matter of a few minutes they are accomplished and the vehicle proceeds under its own power to join the tail of the serial. If repairs cannot be accomplished, the vehicle is towed by the wrecker to the organizational maintenance section's bivouac at the end of the march, where it is repaired and returned to the unit. If the march is tactical, the organizational maintenance section precedes the rear guard and since no delays will be tolerated, disabled vehicles must either be towed or abandoned. If abandonment is necessary, the vehicle's load is either transferred to another vehicle, or is destroyed together with the abandoned vehicle. During a motor march in country infested by guerillas or hostile persons, the organizational maintenance detachment must be sufficiently strong to discourage attack while separated from its serial.

84. MAINTENANCE ON LONG LINES OF COMMUNICATION

When large hauling operations must be undertaken over long supply routes, the organizational maintenance sections of units conducting the operations may be pooled and detachments placed at points along the route. Detachments patrol the route to points of contact with adjacent detachments, to render emergency roadside repair service and to call wreckers when needed. In dry weather the patrol should be mounted in a light truck, in wet weather in a wrecker. It may be necessary to organize table of distribution units to establish roadside service stations for the purpose of providing both first and second echelons of maintenance, relieving the drivers of their responsibility for first echelon maintenance so they may obtain needed rest. The successful operation of roadside service stations requires the maintenance of an adequate supply of spare parts by the station. Parts must be available when needed. This type of operation is most effective if performed on a production line basis (par. 82) and will enable the servicing of a complete serial in a relatively short period of time.

85. MOTOR VEHICLE MAINTENANCE DURING COMBAT

a. Vehicles are put in the best possible condition before combat operations. Drivers or crews receive training in emergency repairs and field expedients. This includes scheduled preventive maintenance services carried out under combat conditions.

b. Conditions of climate and terrain may require that some maintenance activities be increased. For example, in desert operations, air cleaners require additional attention; in extreme cold climate, special vehicle and personnel heaters require frequent attention; and

in amphibious operations, power train assemblies require frequent inspections and servicing to counter the effects of salt water.

c. Driver and crew maintenance services are particularly important during combat. Thorough and complete driver maintenance reduces the repair work required of company and regimental mechanics.

d. Organizational maintenance personnel and equipment are placed where they can best maintain the vehicles of the unit. Normally the maintenance section is located in an accessible location in the rear where it can be easily contacted by the unit it is supporting. During the attack, the maintenance section of the company, battery, or similar unit follows the unit as closely as the situation permits, rejoining it on the objective. During a withdrawal, the maintenance section evacuates all repairable vehicles within its capabilities. Within limits of equipment and time, battlefield recovery and evacuation is a responsibility of organizational maintenance. Equipment which the organization cannot handle is reported to the unit commander and the maintenance section of the next higher echelon. Ordnance units are responsible for evacuation of heavy matériel from using units and for assisting these units, where necessary, in battlefield recovery.

e. On the objective, the maintenance section works on those vehicles and weapons which can be made ready for action within the time available, reporting to the next higher echelon the ones that cannot be repaired.

f. Maintenance and recovery are continuous operations, and the maintenance section must be organized so that it can operate efficiently on a 24 hour basis whenever necessary.

g. During combat, the battalion and regimental maintenance sections are normally located with the battalion combat or field trains or the regimental field trains.

Section II. DIVISIONS

86. DIVISION ORDNANCE OFFICER

Divisions include the office of the division ordnance officer in the table of organization of the organic divisional ordnance unit. The division ordnance officer is assisted by the assistant division ordnance officer, the division maintenance officer, and the division ordnance general supply officer. The division ordnance officer is responsible for—

a. Command of the divisional ordnance unit and any attached ordnance units.

b. Advising the commander and staff on all matters pertaining to ordnance.

c. Preparation and execution of ordnance plans.

d. Determination of requirements, initiation of procurement action, and supervision of the storage and distribution of ordnance matériel, including ammunition.

e. Inspection of the organizational maintenance of ordnance equipment.

f. Operation of ordnance field maintenance activities within the division.

g. Providing the division commander with information on the current and projected availability of ordnance equipment and the logistical effect of deficiencies on current and proposed operations.

h. Inspection of safe practices in the employment of ordnance equipment, investigation of accidents involving the use and handling of ammunition, and recommendations on mechanical and safety engineering matters affecting ordnance equipment.

i. Investigation of and recommendation on instances of improper supply economy and abuse of ordnance equipment.

j. Providing information on the characteristics, capabilities, and limitations of army ordnance equipment and similar items of enemy matériel.

k. Recommendation on the utilization of captured enemy equipment and cooperation with technical intelligence teams in locating and guarding new and unusual types of enemy equipment.

l. Supply and storage of ammunition (see FM 9-6).

87. ASSISTANT DIVISION ORDNANCE OFFICER

The assistant division ordnance officer assists the division ordnance officer in any manner the latter may direct and provides positive direction and coordination for the office of the division ordnance officer. The assistant division ordnance officer may be charged with—

a. Preparation of orders, directives, and periodic reports on the progress and problems of ordnance service.

b. Coordinating technical intelligence matters and the collection and dissemination of information on the capabilities and limitations of enemy matériel.

c. Liaison with the commanding officer of ordnance groups and battalions of army ordnance service and the ordnance officer of corps and adjacent divisions.

88. DIVISION MAINTENANCE OFFICER

The division maintenance officer may be charged with—

a. Supervision of organizational maintenance within the division

to include: inspection of organizational maintenance in using units; spot check inspections of ordnance equipment in hands of troops; preparation of schedules for and supervision of the technical inspection of ordnance equipment in the hands of troops; reconditioning of the ordnance equipment of units withdrawn from combat; and interpretation of standards of serviceability of ordnance equipment.

b. Management of the maintenance effort of the divisional ordnance units to include: staff supervision of the quantity and quality of production by the divisional ordnance unit; supervision of the technical training and cross-training of ordnance repairmen; supervision of battlefield recovery and reclamation of ordnance equipment; advice to the division ordnance general supply officer on requirements for replacement of ordnance equipment and on the anticipated needs for assemblies and spare parts; and cooperation with the division ordnance general supply officer to insure that maintenance and general supply service supplement each other.

c. Arrangement with the maintenance officers of supporting ordnance battalions and groups to include: balancing the work loads between the division ordnance unit and the supporting ordnance service; turn-over of division ordnance collecting points to army ordnance service; assistance in the technical inspection and rehabilitation of the ordnance equipment of units temporarily withdrawn from combat; and turn-over of uncompleted repair work to army ordnance service when the divisional ordnance unit must displace.

d. In the armored division an automotive officer has been provided in addition to the maintenance officer. The duties outlined in a, above are normally assigned to the automotive officer. In the infantry and airborne divisions an assistant maintenance officer must be designated to act as automotive officer.

89. DIVISION ORDNANCE GENERAL SUPPLY OFFICER

The division ordnance general supply officer is responsible for—

a. Supervision of the ordnance general supply situation in the division including: the procurement, storage and issue of ordnance general supplies; investigation and recommendation in all instances where ordnance general supplies are consumed at excessive rates and in all cases of alleged or suspected infractions of supply discipline; inspection of supply activities in the organizational maintenance sections of using units; and investigation of the adequacy of ordnance general supply service to using units.

b. Cooperation with the division maintenance officer to insure that reclamation work is scheduled on the basis of anticipated requirements; that repaired parts and assemblies are returned to supply channels; and that work is not initiated on ordnance equipment unless necessary parts are readily available.

c. Advising the division ordnance officer of the effect of any anticipated shortages in ordnance general supplies and making recommendations on the exploitation of local resources and the utilization of captured enemy matériel.

d. Liaison with ordnance general supply officers of corps and army, and with supply officers of ordnance depot companies responsible for replenishment supply of the divisional ordnance unit.

e. Arrangements with the ordnance general supply officers of supporting ordnance battalions and groups for mutual lateral supply to eliminate or reduce critical shortages that cannot be met in normal supply channels.

90. ORDNANCE MAINTENANCE COMPANY, INFANTRY DIVISION (T/O&E 9-8N)

a. *Mission.* The division ordnance company is charged with the maintenance and supply of ordnance matériel, to the infantry division.

b. *Capabilities.* The ordnance maintenance company, infantry division is a mobile ordnance maintenance company capable of accomplishing any work within the scope of the third echelon of maintenance on all types of ordnance equipment found in the infantry division except for army aircraft, and capable of supplying the needs of the infantry division for organizational spare parts for several days.

(1) *Peacetime.* During periods of minimum activity and limited movement, such as normal peacetime duty in garrison, the infantry division will require no additional third echelon of maintenance support, provided the ordnance maintenance company is at full strength, all personnel are available for duty, and have adequate technical training. The extent to which these conditions may not be realized will indicate the amount of assistance in the third echelon of maintenance that the infantry division must be given by post ordnance shops and by other ordnance maintenance companies. The infantry division will require field maintenance support for its organic army aircraft; fourth echelon of maintenance support for other ordnance equipment; the replacement of unserviceable ordnance equipment; and the replenishment of ordnance general supply at frequent intervals. This additional ordnance support is normally furnished by post ordnance shops, and by light aircraft maintenance companies, heavy maintenance companies, and depot companies.

(2) *Field exercises and combat.* In the field, either on maneuvers or in combat, the infantry division may require assis-

tance in the third echelon of maintenance. This requirement for additional third echelon of maintenance support is largely a matter of the time required for maintenance work. The need for frequent displacement and for providing the security of its installation reduces the time and personnel available for work, and as a result the repair and return of unserviceable equipment to the user may be delayed unless additional support is provided. As in peacetime, the infantry division will require field maintenance support for its organic army aircraft; fourth echelon of maintenance support for other ordnance equipment; replacement of unserviceable equipment; and replenishment of ordnance general supply at frequent intervals. Additional ordnance support is provided by army ordnance service in the combat zone and by logistical commands in the communications zone.

c. Organization. The ordnance maintenance company, infantry division consists of a company headquarters, a supply platoon, and two maintenance platoons. Each maintenance platoon includes a service section, an automotive section, and an armament section to enable this company to operate in multiple locations in support of widely separated regimental combat teams.

91. ORDNANCE MAINTENANCE COMPANY, AIRBORNE DIVISION (T/O&E 9-87)

a. Mission. The division ordnance company is charged with the ordnance maintenance and supply of the airborne division. For information on airborne operations refer to FM 71-30.

b. Capabilities. The ordnance maintenance company, airborne division is a mobile ordnance maintenance company capable of accomplishing any work within the scope of the third echelon of maintenance on all types of ordnance equipment found in the airborne division except for army aircraft, and capable of supplying the needs of the airborne division for organizational spare parts for several days. This company may be transported by air together with most of its equipment and a limited quantity of supply. Some personnel may be trained as parachutists to permit early reconnaissance of the landing area. The ordnance maintenance company of the airborne division is smaller than the ordnance maintenance company of the infantry division. Because the airborne division has approximately the same amount of equipment as the infantry division, additional ordnance support is normally required. In peacetime, this is provided by post ordnance shops, ordnance maintenance companies, and depot companies. During field exercises and in combat, additional ordnance support is provided by army ordnance service in the com-

bat zone and by logistical commands in the communications zone. The airborne division may be divided into an airborne element and an overland element when entering combat. The ordnance maintenance company, airborne division normally enters the combat area by cargo plane in one of the later serials of the air movement. Equipment and supplies necessary for maintenance are landed with the company. Upon landing, personnel and equipment are assembled in a pre-designated area. The ordnance maintenance company is so trained that maintenance and supply work can be initiated immediately. Replacement of equipment, except through exploitation of captured enemy material, is impractical until the later phases of the operation. The replenishment of ordnance general supply in the airhead must be initiated within a few days. The overland element may be supported entirely by army ordnance service, leaving the ordnance maintenance company, airborne division free to devote its entire effort to the airborne element.

c. Organization. The ordnance maintenance company, airborne division consists of a company headquarters, a supply section, a service section, and a recovery section, organized into one platoon; an automotive platoon; and an armament platoon. Detachments may be taken from platoons to make up teams, to support forces of lesser size than the airborne echelon of the division.

92. ORDNANCE MAINTENANCE BATTALION, ARMORED DIVISION (T/O&E 9-65N)

a. Mission. The ordnance maintenance battalion, armored division is charged with the maintenance and supply of the armored division. For a detailed discussion of the ordnance maintenance battalion, armored division refer to FM 17-50.

b. Capabilities. The ordnance maintenance battalion, armored division is a mobile battalion capable of accomplishing the third echelon of maintenance on all types of ordnance equipment found in the armored division except for army aircraft, and capable of supplying the needs of the armored division for organizational spare parts for several days. Normally the armored division requires no additional third echelon of maintenance support, except for the field maintenance of organic aircraft, either in peacetime or in combat. Personnel of the ordnance maintenance battalion are technically qualified to perform any repairs within the scope of field maintenance except for army aircraft. Practical considerations of time and the volume of work to be accomplished may limit the efforts of this battalion to accomplishing the maximum number of quick repair jobs for prompt return to the user. Time-consuming jobs and army aircraft are evacuated to post ordnance shops or to heavy maintenance companies and light aircraft maintenance companies, and may be either repaired or

replaced. During field exercises and in combat, army ordnance service provides field maintenance support for army aircraft; heavy maintenance support for other ordnance equipment; replacement of un-serviceable equipment; and replenishes ordnance general supply for the armored division in the combat zone. Similar ordnance support is provided by logistical commands for the armored division when in the communications zone.

c. Organization. The ordnance maintenance battalion consists of a headquarters and headquarters company, three maintenance companies, and a medical detachment.

- (1) The headquarters and headquarters company includes enlisted personnel to assist the division ordnance officer and his staff, the battalion headquarters section, a company headquarters, a supply section, a recovery section, and a maintenance section. The supply section carries bulky assemblies for the other companies and consolidates requisitions received from the maintenance companies. The recovery section is a pool of tank transporters for general service within the armored division. The maintenance section normally provides field maintenance support for division headquarters, the division trains headquarters, and division special troops.
- (2) The maintenance companies consist of a company headquarters, a supply section, and a service section organized in one platoon; an automotive platoon; and an armament platoon. Normally one maintenance company supports each combat command and the third company supports the reserve command.
- (3) The medical detachment operates an aid station for the ordnance battalion.

93. OPERATIONS OF DIVISION ORDNANCE UNITS

a. Division ordnance units are a part of the division service trains and their location and movement are coordinated with the division G4.

b. Before and after operations, division ordnance units conduct technical inspections of ordnance equipment to insure that it is in serviceable condition and recondition it as required. Division ordnance officers will be alert to take advantage of local situations which permit them to inspect and recondition the equipment of divisional units, and maintain records based on their inspections of organizational maintenance, to demonstrate the frequency and extent of reconditioning required by each unit of the division. Normally, the reconditioning of companies and battalions may be accomplished by the divisional ordnance unit but when large organizations are avail-

able for reconditioning, the work must be planned well in advance in order to insure that replacement major items, assemblies, and parts will be on hand to support the program.

c. In a theater of operations, the division ordnance unit will be required to support the division during the following types of operation:

- (1) *The advance to contact.* The advance to contact is the movement of the division from an assembly area to a position in proximity to the enemy, by marching, by motor, by air, by water, or by a combination of means. Normally the infantry and armored divisions will march in several columns on parallel roads. Maintenance detachments of appropriate composition and size will march near the tail of each column to perform march maintenance. Recovery equipment and emergency repair crews are required to keep routes of advance clear and may either sweep the route behind the advancing columns or may be posted at critical points. Work that cannot be repaired during the march is carried along and repaired at the earliest opportunity. If the movement is by water the division may participate in an amphibious landing on a hostile shore. The infantry division may also be air transported in which case the division ordnance company has much the same problems as the division ordnance company, airborne division. When the infantry or airborne divisions march by motor, the division ordnance unit may require assistance from army ordnance service. The airborne division prepares for entry into combat in the marshalling area. Ordnance service in the marshalling area is provided by a logistical command, and the ordnance maintenance company, airborne division is primarily concerned with its own preparations for the movement by air. Upon arrival in the airhead the ordnance maintenance company consolidates its equipment and personnel and commences operations immediately.
- (2) *The attack.* The attack includes the support of maneuvering forces and the advance to successive positions. In this operation, arrangements are made to collect weapons brought into aid stations with casualties. Liaison detachments visit artillery units to do such work as is required. Replacements of unserviceable artillery weapons are delivered to battery position. Recovery sections are on call to assist using organizations in battlefield recovery, and to remove equipment from the axis of evacuation or vehicle collecting points to maintenance companies. Automotive platoons increase their work-

ing rate to return vehicles to users with the least possible delay. As combat units advance, the maintenance detachment, or the entire ordnance unit displaces to remain within supporting distance. If regimental combat teams of the infantry and airborne divisions, or combat commands of the armored division, maneuver at considerable distances from the main part of the division, maintenance detachments may be attached temporarily to these maneuvering elements.

- (3) *The exploitation of a break through.* This includes the pursuit of the enemy and occupation of new positions. In this operation, the ordnance unit continues to support the operation by a combination of the methods used during the advance to contact and the attack. Increased emphasis is placed on forwarding replacement major items and the supplies required by organizational maintenance sections. Maintenance platoons displace forward to accomplish the repair of unserviceable equipment and return it to service. Stocks of captured enemy matériel are exploited wherever possible. The probability that ordnance units or detachments will engage in combat is great, since they are no longer completely covered by friendly forces. Maintenance detachments may be attached to combat teams to insure close support of regimental combat teams or combat commands engaging in the pursuit of a defeated enemy.
- (4) *The defense.* The defense includes the counter-attack. In this operation, emphasis on the support of emplaced artillery is continued. Particular attention is paid to forces held in reserve for counter attack, and to work for organizations that have been subjected to heavy attack. Defense of the ordnance installation is accomplished by the ordnance unit with minimum outside assistance.
- (5) *The withdrawal from contact.* The withdrawal from contact is the retrograde movement to new positions in the rear or the breaking off of contact with the enemy. In this operation, shop equipment and unserviceable matériel in shops is evacuated to the rear of the new position or to an assembly area to the rear. Recovery detachments are held close to the covering forces to recover and evacuate damaged equipment. Captured enemy matériel, unserviceable equipment, and ordnance general supplies that cannot be evacuated are demilitarized upon orders from the division commander. Since the front may no longer be intact, the ordnance maintenance unit must provide its own defense.

94. COMMUNICATIONS

Division ordnance units are provided with radios and are secondary stations in the division administrative net. Instructions on signal operating procedures are published by the division. Telephones are utilized for communications within the unit. Messenger service is maintained in accordance with the instructions of the division ordnance officer.

95. STANDING OPERATING PROCEDURES

Standing operating procedures of the division ordnance unit will provide for—

a. Participation in spot check and technical inspections of ordnance equipment in the hands of the division. This may also involve instruction for operating personnel and organizational maintenance personnel.

b. Replenishment of ordnance general supplies consumed by organizational maintenance sections of the division.

c. Repair of ordnance equipment and return to user, or action to obtain replacement by a like serviceable item. Emphasis is placed on accomplishing the maximum number of repair jobs in order to conserve time that would otherwise be lost by evacuation to army ordnance service, and yet to prevent the division ordnance unit from becoming involved in time-consuming repair jobs which might impair its mobility. It is estimated that 80 percent of the repair jobs received by the division ordnance unit can be repaired within two working days by the third echelon of maintenance and that 20 percent will warrant evacuation to heavy maintenance companies or to the communications zone. Emplaced artillery is repaired in location or replaced. Unserviceable small arms and instruments are replaced to the maximum extent possible, except that during technical inspections and rehabilitation periods repairs may be accomplished in the bivouac of the supported using units.

d. Assistance in battlefield recovery will be extended to divisional units for work beyond their capabilities.

e. Main supply routes within the area of responsibility of the division will be patrolled to render assistance to disabled vehicles and to keep routes open.

f. The divisional ordnance maintenance unit either accomplishes or makes all arrangements for ordnance maintenance and supply required by the division. It should not be necessary for a divisional unit to contact any unit of army ordnance service to obtain ordnance maintenance and supply except for light aircraft.

96. ORDNANCE MAINTENANCE COMPANY, AMPHIBIOUS SUPPORT BRIGADE

a. Mission. The ordnance maintenance company, amphibious support brigade (T/O&E 9-97) is charged with the maintenance and supply of the amphibious support brigade. For information on the amphibious support brigade refer to FM 31-5.

b. Capabilities. The ordnance maintenance company, amphibious support brigade is a mobile third echelon of maintenance unit capable of accomplishing the ordnance maintenance and supply of all organic units of the amphibious support brigade. The company can furnish a maintenance detachment to each of the three regiments when they are required to operate separately. The company has been designed to provide for 50 percent over-load of maintenance due to operation of equipment in sand and salt water. In peacetime, fourth echelon of maintenance support, replacement of unserviceable equipment and replenishment of ordnance general supplies is provided by post ordnance shops or by heavy maintenance and depot companies. In combat, the amphibious support brigade engaged in landing operations must be self-sufficient until army ordnance service is ashore and established. It is advisable for arrangements to be made for the replacement of unserviceable equipment and for replenishment of ordnance general supply by loading a few vehicles with items expected to be needed, and scheduling these for inclusion in beach reserves.

c. Organization. The ordnance maintenance company, amphibious support brigade consists of the brigade ordnance officers section, the company headquarters, a supply section, a service section, an automotive platoon, and an armament section.

d. Communications. The brigade signal service is responsible for the installation and operation of telephone communications to and within the company. Messenger service is maintained in accordance with the instructions of the brigade ordnance officer.

e. Operations. Standing operating procedures of the ordnance maintenance company, amphibious support brigade will provide for the same operations as were prescribed for divisional ordnance units in paragraph 95 above, except that battlefield recovery is a function of the engineer regiments. The ordnance maintenance company, amphibious support brigade has no responsibility for the movement or handling of ammunition or ordnance general supply required by a task force being landed across the beach. Appropriate ordnance units must be provided, together with the necessary ordnance command units, to accomplish this mission. The entire effort of the ordnance maintenance company is required to provide ordnance service for organic elements of the brigade. Personnel of the ordnance maintenance company, amphibious support brigade are required to con-

duct instruction in, and to supervise the waterproofing of equipment. During amphibious operations, they organize de-waterproofing points to accommodate vehicles and equipment arriving across the beach.

Section III. DIRECT SUPPORT

97. GENERAL

a. Ordnance service in the divisions was covered in the preceding section. Division ordnance maintenance units provide direct support for units organic to divisions, while mobile ordnance maintenance companies of army ordnance service provide direct support for non-divisional units in the combat zone. The information contained in this section is equally applicable to division ordnance maintenance units. Pertinent information should also be applied to post ordnance shops, since these shops may provide direct support for using organizations in garrison, in the absence of properly trained ordnance units.

b. The responsibility of direct support includes—

- (1) Technical advice and assistance to operators of ordnance equipment and to organizational maintenance mechanics, and assistance in maintenance training in using organizations to the extent requested by the commander of the using organization or prescribed by higher headquarters. The success of ordnance field maintenance will be jeopardized unless the using organization understands, accepts, and discharges its responsibility for the organizational maintenance of its ordnance equipment. Otherwise, the direct support unit will be required to do this work for the using organization at the expense of accomplishing its scope of field maintenance.
- (2) Participation in the program of command spot check inspections and technical inspections of ordnance equipment in the hands of using organizations within the limits prescribed by the commander exercising jurisdiction over field maintenance. As an agency of the commander exercising jurisdiction over field maintenance, direct support units conduct technical inspections of ordnance equipment in the hands of using organizations, to insure good practices in organizational maintenance and in supply economy.
- (3) Replenishment of organizational spare parts and operating supplies consumed by using organizations in organizational maintenance, and exchange of unserviceable assemblies, sub-assemblies, and parts turned in by using organizations. Unless an adequate and positive system for the replenishment of organizational spare parts and operating supplies, con-

sumed in organizational maintenance, is provided; the using organization cannot discharge its responsibility for organizational maintenance. The supply responsibility of the direct support unit is of equal importance with its inspection responsibility. It is important that expensive and scarce assemblies, subassemblies, and parts be returned to ordnance channels with the least practical delay. For this reason the exchange of unserviceable assemblies, subassemblies, and parts for serviceable components is encouraged.

- (4) Repair of unserviceable major items and prompt return to the using organization, or action to obtain replacement by a like serviceable item. The theory behind the repair and return of ordnance equipment to the user is simply stated. If five jobs are to be done and upon inspection it is found that four will require an average expenditure of 25 man-hours per job, while the fifth may require 100 man-hours, it is apparent that the best interests of the using organization are served if the direct support unit devotes its efforts to the prompt repair and early return of the four jobs requiring 25-man hours each, rather than to dissipate its efforts in attempting to repair the job that requires 100 man-hours. By intelligent application of this principle, the using organization obtains the maximum service from the direct support unit.
- (5) Assistance to the using organization in battlefield recovery and evacuation, to the extent that the requirement exceeds its capabilities, and in emergency road side service or main supply routes. The services provided are directed towards the early recovery and evacuation of unserviceable ordnance matériel to a direct support unit, so that prompt repairs can be effected.
- (6) Follow-up with higher echelons of ordnance service on the requirements submitted by using organizations. The direct support unit must protect and defend the interests of the using organization with regard to ordnance maintenance and supply. The needs of the using organization for tools, parts, and for the replacement of major items must be followed up by the direct support unit. The system of back-ordering supplies requested by the using organization must be effective.

98. ORDNANCE MEDIUM MAINTENANCE COMPANY

a. Mission. The ordnance medium maintenance company, T/O&E 9-7, provides direct support for combat units in the combat zone, and may be employed on any of the following missions:

- (1) To augment the organic divisional ordnance service of infantry divisions and of airborne divisions.
- (2) To provide direct support for corps troops.
- (3) To provide direct support for army heavy artillery, including heavy antiaircraft artillery.
- (4) To rehabilitate the ordnance equipment of combat units, withdrawn from combat for short periods, for rest.
- (5) To perform maintenance-in-storage of the army utility stock of towed artillery and vehicles, held for replacement purposes.

b. Assignment. Ordnance medium maintenance companies are attached to ordnance battalion headquarters on the basis of the density of ordnance equipment encountered in various parts of the combat zone.

c. Capabilities. The ordnance medium maintenance company is a mobile ordnance maintenance company capable of accomplishing the third echelon of maintenance on all types of ordnance equipment, except army aircraft, found in the combat zone, and capable of supplying the needs of supported using organizations for organizational spare parts. Under normal conditions it is capable of providing direct support for the equivalent of 100 artillery pieces, 100 tanks, and 750-wheel vehicles; with other equipment such as small arms, optical instruments, electrical fire control systems, and trailers in the proportions normally experienced in the combat zone.

d. Organization. The ordnance medium maintenance company includes a supply section, a service section, and a recovery section, organized into one platoon; an automotive platoon, and an armament platoon. A signal corps radio repair detachment may be attached to this company when the amount of radio equipment to be repaired incident to field maintenance justifies such an arrangement.

99. ORDNANCE MEDIUM AUTOMOTIVE MAINTENANCE COMPANY (T/O&E 9-127)

a. Mission. The mission of the ordnance medium automotive maintenance company, T/O&E 9-127, is to provide direct support to service units and combat support units in the combat zone, and may be employed in any one of the following missions:

- (1) To provide direct support for corps service troops.
- (2) To provide direct support for army service troops.
- (3) To rehabilitate the ordnance equipment of service troops during rest periods.
- (4) To combat load and to perform maintenance-in-storage of the army utility stock of general purpose vehicles, held for replacement purposes.

b. Assignment. Ordnance medium automotive maintenance companies are attached to ordnance battalion headquarters on the basis of the density of wheel vehicles encountered in various parts of the combat zone.

c. Capabilities. The ordnance medium automotive maintenance company is a mobile ordnance maintenance company capable of accomplishing the third echelon of maintenance on wheel vehicles and small arms of service units and combat support units in the combat zone, and capable of supplying the needs of supported using organizations for organizational spare parts. Under normal conditions, it is capable of providing direct support for the equivalent of 1,500 wheel vehicles, and the small arms normally encountered in service units and combat support units of the combat zone. In assessing the capabilities of the medium automotive maintenance company, the trucks of engineer dump truck companies and transportation corps truck companies are considered as requiring twice the field maintenance work normally required by vehicles of that weight classification in other units.

d. Organization. The ordnance medium automotive maintenance company consists of a company headquarters, a supply section, a service section, and a small arms section, organized into one platoon; and two identical automotive maintenance platoons.

100. RELATIONS WITH THE ARMY ORDNANCE OFFICER

The army ordnance officer exercises operational control over direct support units. He states his plans and policies in terms of orders which are published by army headquarters and distributed to the commanding officers of those ordnance groups and battalions charged with the responsibility for direct support. He conducts frequent inspections of direct support operations to insure that the service rendered is efficient. He prepares the policy on the frequency and scope of technical inspections for approval by the army commander. He recommends the attachment of direct support companies and battalions to ordnance groups, and the general location and movement of ordnance battalions and groups. He reviews the economical repair limits established by ordnance group commanders and coordinates these within the army and with supporting logistical commands. He visits the chiefs of staff of divisions and the commanders of non-divisional units to verify the adequacy of direct support.

101. RELATIONS WITH THE CORPS ORDNANCE OFFICER

a. The ordnance officer of an independent corps or task force has the same responsibilities as the army ordnance officer. Normally

ordnance units are not attached to the corps when the latter is serving as part of an army.

b. Battalion commanders of forward direct support battalions maintain close liaison with the corps ordnance officer. Although the corps has few logistical responsibilities, the corps ordnance officer is responsible for insuring that the ordnance service furnished by army ordnance service is adequate. As a representative of the corps commander, the recommendations of the corps ordnance officer are solicited and observed in the management of army ordnance service. The corps ordnance officer coordinates arrangements for space and movement of ordnance units of the forward direct support battalions within the corps sector, and his wishes as to priority for ordnance maintenance and supply, and the displacement of direct support companies are followed by the battalion commanders of the forward direct support battalion.

102. RELATIONS WITH DIVISION ORDNANCE OFFICERS

Direct support units of army ordnance service frequently accept overflow work from divisional ordnance maintenance units. Normally direct support units of army ordnance service conduct no business with any unit of the division, other than the divisional ordnance maintenance company. Judgment in assigning channels of contact is essential. For example, the division ordnance officer may arrange that—

a. Ordnance units attached to a division furnish direct support to a portion of the division.

b. The forward direct support battalion continue to support units (other than ordnance) attached to the division and may request direct contact with those units.

103. RELATIONS WITH USING ORGANIZATIONS

a. The battalion commander of each direct support battalion will assign specific missions for direct support to each maintenance company attached to his battalion. These missions will fix the responsibility for the direct support of each using organization. Battalion commanders are responsible for maintaining up-to-date situation maps of their areas of responsibility, which show the locations and movements of supported using organizations. This information is highly classified and will be kept in a secure place, but will be made available to the commanders of attached ordnance companies in order that direct support will be continuous.

b. Notification of task assignment must be brought to the attention of the supported unit promptly. The commanding officer of each direct support battalion and direct support company will con-

tact the commanding officer of each organization he is designated to support upon receipt of orders stating his mission. A letter notifying the using organization of the direct support assignment should be delivered at the initial contact or mailed, whichever is sooner, to the using organization. A sample letter is shown in appendix I. The ordnance unit should use initiative in the preparation of this letter so as to best bring to the using units attention the service to be expected. In the letter the commanding officer of the using organization will be informed of the location of the direct support company assigned to his support and will be advised that all ordnance maintenance and supply will be provided by that company.

c. Much can be done on the initial contact to establish a friendly and helpful attitude which will increase the efficiency of the service rendered and go a long way toward producing a satisfied customer. During the initial contact, the following information should be obtained:

- (1) Status of organizational tools and supplies.
- (2) Status and training of organizational maintenance mechanics.
- (3) Status of equipment.
- (4) Copies of unfilled requisitions and other data pertaining to supply.
- (5) General condition of equipment to include detailed information on anticipated requirements for engines, tank track, tires, artillery tubes, etc.
- (6) Status of publications pertinent to ordnance service and matériel.

104. TECHNICAL INSPECTIONS

a. Schedules of technical inspections are published by the commander exercising jurisdiction over field maintenance. The purpose of technical inspections of ordnance equipment is to ascertain the serviceability of ordnance equipment in the hands of troops and the adequacy and efficiency of organizational maintenance in the command. Direct support units participate in command spot-check inspections and in technical inspections.

b. The procedures for technical and command spot-check inspections are covered in chapter 11.

c. Commanders exercising jurisdiction over field maintenance will insure that all equipment under their control is given complete technical inspection by qualified personnel of ordnance direct support units at least once annually for the purpose of ascertaining serviceability, and to predict future requirements for field maintenance and

for replacement. During combat, technical inspections are conducted before and after operations.

105. TRAINING

Inspection reports are prepared by direct support units and transmitted through ordnance channels to the commander exercising jurisdiction over field maintenance, where they are analyzed. The purpose of analysis of inspection reports is to determine the frequency of deficiencies and the need for training courses to be conducted by direct support units. Corrective action and measures to prevent recurrence of deficiencies are directed in command channels and may take the form of a letter to the commanding officer of a using organization, inviting his attention to deficiencies in his organization; an order inviting the attention of all commanders to deficiencies of a general nature; or a training program, under the supervision of the G-3, to improve standards of organizational maintenance. Analysis of retained copies of inspection reports may be made by group and battalion commanders, and informal arrangements made with commanders of using organizations to conduct training of organizational maintenance mechanics in order to increase maintenance efficiency.

106. SUPPLY

a. Using organizations request organizational spare parts and operating supplies from the direct support company. Direct support companies, in turn, submit requests on ordnance depot companies for supplies to meet the requirements of using organizations as well as for parts and operating supplies required in their own field maintenance operations.

b. The stockages maintained by direct support companies will reflect the types as well as the quantity of major items supported. Battalion and group supply officers will exercise constant supervision over the stocks maintained by direct support companies to insure proper stockage and equal distribution of any items in short supply. Battalion and group supply officers verify the number of major items for which direct support companies are responsible to insure that the basis for computing supply requirements are not duplicated. Third echelon of maintenance companies normally limit their initial stockage to 80 per cent of the number of major items in the hands of supported using units, since the balance of ordnance equipment in the hands of troops may be expected to require evacuation to heavy maintenance companies as overflow work. Items stocked by ordnance units to support equipment authorized for an operational project are returned to designated ordnance depots when the operational project has terminated.

107. MAINTENANCE

The relative efficiency of direct support companies is measured by the availability of ordnance equipment in the hands of the using organizations they support. The importance of insuring the accomplishment of organizational maintenance by the user, and the relation of technical inspections, training, and the replenishment of parts to this goal has been discussed. The means for insuring the constant availability of ordnance equipment to the user are shown according to their importance.

a. By proper organizational maintenance, detect and correct incipient mechanical failures.

b. By means of contact parties, accomplish work in the bivouac or parks of using organizations.

c. Concentrate the maintenance effort of direct support companies on the repair of the maximum number of quick repair jobs.

d. Arrange for replacement of unserviceable major items from the utility stock as soon as it is determined that repairs will be unduly delayed.

e. Reduce evacuation and travel time by locating the direct support company in the proximity of supported using organizations.

108. CONTACT PARTIES

a. The normal method of contact between direct support ordnance units and their customer is by daily contact party. This contact party may be of any composition that will accomplish the mission of giving maintenance and supply support to the using arms or services. In cases where no specific work is to be accomplished, contact may be made by any qualified officer or NCO. In cases where an individual makes the contact, it is normally only for the purpose of delivering small items on requisition and for determining the further maintenance and supply needs of the supported unit. In other cases where a specific maintenance job is known to be required, the contact may be made by a work party with tools and supplies necessary to accomplishment of the mission. Jobs which require the facilities of the direct support ordnance company are evacuated to the shop area. Training should emphasize that these contacts must be made daily in the combat zone and as frequently as conditions require in the communications zone. The supporting ordnance unit's personnel making these contacts should develop an intimate and friendly relation with unit S4's and other key personnel contacted so that they understand thoroughly their customer's problems and can anticipate service required rather than permit emergencies to develop. Company, battalion, and group commanders should develop the habit of frequent personal contact with supported

units as a follow-up to this service. Battalion and group headquarters must develop within their commands suitable reporting procedures to insure that units under their command have been indoctrinated on this phase of ordnance service and are maintaining vigorous contact with their customers. Normally this system should provide for a daily report of units contacted, location of these units and the name of the individual with whom the contact was made.

b. The repair of small arms is accomplished incident to technical inspections. The small arms repair section is required to repair all small arms during technical inspections conducted annually, and before and after operations. In garrison, the small arms section should provide a range detail whenever the supported using organization is on a firing range. During combat, a relatively large utility stock of small arms is collected as the result of recovery operations and visits to aid stations. These are repaired and used for replacement issues.

c. The repair of emplaced artillery is conducted by contact parties at the battery position and unserviceable artillery pieces are replaced, unless repairs can be accomplished in less time than would be required for replacement.

d. Before and after action technical inspections may be made by contact parties and repairs may be accomplished at the same time. The combined efforts of organizational maintenance mechanics and contact parties of direct support companies will usually produce very satisfactory results, since all questions as to the scope of maintenance and the availability of tools and parts are quickly resolved.

109. ECONOMICAL REPAIR TIME LIMITS

Direct support companies must constantly determine and evaluate work loads in order to decide whether to hold a piece of equipment in their shop and attempt to repair it, or to evacuate it to heavy maintenance companies. Certain factors are applicable in all cases but the final solution of the problem is dependent upon good judgment. Much depends upon the tactical situation confronting the supported using organization. More time can be taken if these organizations are not faced with the possibility of displacement than under conditions that might call for immediate movement. As emphasized in earlier chapters of this manual, direct support companies must be able to keep pace with the using organizations they support. At all times direct support companies concentrate on repairing the maximum number of quick repair jobs for prompt return to supported using organizations. As experience is gained, it is possible for battalion and group maintenance officers to establish economical repair time limits for each category of major item in terms of man-hours

allowed to be expended by each echelon of maintenance. It is incumbent on direct support companies to evacuate major items when inspection shows more work is required than is allowed by the economical repair time limit. As a guide, the following table of economical repair time limits for direct support companies is furnished:

Economical repair time limits, direct support units

Matériel	Field Exercises and active combat man-hours	Garrison and inactive periods of combat man-hours
Small arms	2	4
Medium and heavy artillery	16	32
Wheel vehicles	32	64
Tanks	64	96
Other track vehicles	48	64
Optical Instruments	4	8

110. INITIAL INSPECTION IN ORDNANCE SHOPS

a. Direct support companies emphasize the initial inspection of ordnance major items received in their shops. It is fundamental to the principle of prompt repair and return of ordnance equipment to the user, and the application of economical repair limits, that each major item be inspected immediately on receipt in order that its repair or disposition may be planned. Any delay in accomplishing the initial inspection must inevitably be added to the time the major item is out of service.

b. Initial inspectors of direct support companies are trained in the diagnosis of mechanical equipment and must make the maximum use of diagnostic equipment available to the company.

111. REPLACEMENT OF MAJOR ITEMS

The firepower and mobility of the using organizations is dependent upon the presence of its authorized equipment at all times. For this reason, direct support companies are authorized to provide replacements for major items which cannot be repaired and returned to the user within the established economical repair limits. Normally replacement major items are allocated to heavy maintenance companies and may be turned over to direct support companies in exchange for an unserviceable like item which is beyond their repair capabilities. The exchange basis between heavy maintenance companies and direct support companies of army direct support battalions is established by ordnance battalion and group commanders. Exchange basis between heavy maintenance companies and divisional ordnance units is established by arrangement between division ordnance officers,

corps ordnance officers, and ordnance battalion and group commanders. All exchange arrangements are subject to the approval of the army ordnance officer. A quantity of small arms and instruments may be issued to direct support companies as a utility stock to be accounted for periodically. Artillery pieces and gun tubes may be issued to direct support companies on the certificate of the company commander that they are required for exchange for an unserviceable item of emplaced artillery. Wheel vehicles and track vehicles are normally regulated items, and exchange may be limited to replacement of those items which are repairable by the direct support company. When a major item is replaced, the unserviceable item is repaired by the direct support company at the earliest practical date or evacuated to the supporting heavy maintenance company. When repaired, this item is placed in the utility stock for future exchange. Hand receipts are accomplished when major items are exchanged to assist in keeping a record of the utility stock.

112. ORGANIZATION RECORDS OF SERVICE

Direct support companies maintain complete records pertaining to each supported using organization to facilitate the management of their work. A separate jacket file is maintained for each organization and is called "The Organization Record of Service". It contains the—

a. Designation of the organization and names of the commanding officer, supply officer, and maintenance officer.

b. Calendar of all inspections conducted with copies of the latest inspection reports.

c. Copies of unfilled requisitions.

d. Copy of current equipment status report, together with copies of any letters authorizing special issue of equipment.

e. Outstanding modifications of equipment to be accomplished.

f. Other data pertaining to the organization. This file is kept current in the shop office. When the supported using organization is moved or transferred to the responsibility of another direct support company, the organization record of service is forwarded through ordnance channels to the new direct support company.

113. RECONDITIONING OF EQUIPMENT

Frequently, using organizations are withdrawn from combat or from service operations for the purpose of resting personnel, assimilating replacements, and reconditioning ordnance equipment. The reconditioning of ordnance equipment entails a complete technical inspection and the accomplishment of the work found to be necessary together with the replacement of items that cannot be economically

repaired in the time available for reconditioning the equipment. Normally an ordnance battalion is assigned to this mission but any direct or heavy support company may also be utilized if it can be spared from its normal mission. Frequently, direct support battalion commanders will be aware of a period of minimum activity on the part of supported using organizations and can undertake a reconditioning program without the organization being withdrawn from its area.

114. BATTLEFIELD RECOVERY AND EVACUATION

Direct support units in the field normally have certain area responsibilities in addition to the support of specific using organizations. These responsibilities include battlefield recovery and evacuation. Battlefield recovery is primarily a responsibility of the using organization. However, the bulk and size of ordnance equipment frequently is beyond their capabilities and direct support ordnance units may augment their capabilities in this respect. Normally, an ordnance recovery company is available in the forward area to accomplish this mission. Direct support ordnance companies will frequently discover that an item of ordnance equipment loaded on their transportation is beyond their repair capabilities and in order to save time in evacuation, it is feasible for the direct support company to evacuate this material directly to a collecting point or to a heavy maintenance company.

115. EMERGENCY ROADSIDE SERVICE

During combat operations, using organizations often operate over main supply routes many miles from the bivouac area and may require emergency service. To provide for such emergencies each direct support battalion arranges for scheduled road patrols over main supply routes within its area of responsibility. These patrols normally consist of two or more automotive mechanics, mounted in a light vehicle with a small stock of emergency parts, repair kits, and tools. Patrols are dispatched and routed so as to pass any given point on a main supply route at least once every two hours. Emergency service is rendered on the spot to any disabled equipment found on the highway. If the service required is beyond the capability of the patrol, additional help is dispatched from the direct support company furnishing the patrol. To facilitate the movement of disabled equipment to an ordnance shop, a wrecker crew is called by the patrol. This wrecker may be stationed at convenient intersections along the road being patrolled, or at the ordnance company shop area. Except under bad weather conditions or exceptional circumstances, the wrecker should not accompany road patrols. By implementing this procedure,

using organizations and transients are assured of emergency roadside assistance at all times.

116. LOCATION OF DIRECT SUPPORT UNITS

Mobility is an inherent and necessary characteristic of the direct support company. Direct support companies keep pace with supported using organizations and locate their shops as close to these units as practicable. Direct support companies retain ability to displace rapidly by adhering to the economical repair time limits and by evacuating overflow work to heavy maintenance companies. Normally direct support companies execute a displacement in a single serial but certain circumstances, such as congested traffic, may make it necessary to infiltrate by working sections. Physical locations of direct support units in the field must conform to available road nets as well as to the tactical situation. Normally direct support companies assigned to support nondivisional units of corps troops will be located well within the corps sector, and the movement and location of these units will be based on the desires of the corps ordnance officer. Too long a distance between supported using organizations and direct support companies will result in a reduction of the ability of liaison detachments and contact parties to accomplish their missions. Direct support companies in the army service area are located in close proximity to the service organizations found in that area. Arrangements for locations are made through the army ordnance officer.

117. STANDING OPERATING PROCEDURES

Standing operating procedures of the ordnance medium maintenance company and the ordnance medium automotive maintenance company will provide for—

a. Participation in spot-check and technical inspections of ordnance equipment in the hands of supported using organizations. This may also involve instruction for operating personnel and organizational maintenance personnel.

b. Replenishment of ordnance general supplies consumed by organizational maintenance sections of the supported using units.

c. Repair of ordnance equipment and return to user or action to obtain replacement by a like serviceable item. Emphasis is placed on accomplishing the maximum number of quick repair jobs in order to conserve time that would otherwise be lost by evacuation to heavy maintenance companies, and to prevent the company from becoming involved in the time-consuming repair jobs which might impair its mobility. As a guide, it is estimated that 80 percent of the repair jobs received by divisional ordnance maintenance units and by medium maintenance companies will require third echelon of maintenance and

can be repaired within two working days, and that 20 percent will warrant evacuation to heavy maintenance companies because of the time required for repairs. Emplaced artillery is repaired in location and daily contact is required during combat. Unserviceable small arms and instruments are replaced to the maximum extent possible, except that during technical inspections and rehabilitation periods repairs are accomplished in the bivouac of the supported using units.

d. Assistance in battlefield recovery will be extended to supported using units for work beyond their capabilities when ordnance recovery companies are not available.

e. Main supply routes within the area of responsibility of the direct support company will be patrolled to render assistance to disabled vehicles and to keep routes open.

f. Work received from divisional ordnance maintenance companies of airborne and infantry divisions is accepted on work request, repaired, and returned to the divisional ordnance maintenance company. Normally, direct support companies are not required to support armored divisions, since the divisional ordnance battalion is capable of supporting the armored division during combat. However, direct support ordnance maintenance companies may participate in the reconditioning of equipment of armored divisions during rehabilitation periods. All contacts with airborne and infantry divisions will normally be accomplished through the division ordnance company unless the division ordnance officer should request otherwise.

g. The direct support maintenance company meets all needs of the supported using organization for ordnance service, except for ammunition service. It should not be necessary for a supported using organization to contact any other element of ordnance service to obtain ordnance maintenance and supply except for support of light aircraft.

Section IV. HEAVY MAINTENANCE

118. GENERAL

a. The term, heavy maintenance company as employed in this section includes both the ordnance heavy maintenance company and the ordnance heavy automotive maintenance company. In the combat zone, the efforts of the division ordnance maintenance units and the mobile ordnance maintenance companies of army ordnance service are supplemented by semimobile heavy maintenance companies of army ordnance service. In the zone of interior, post ordnance shops, or a combination of post ordnance shops and heavy maintenance companies may supplement division ordnance maintenance units and mobile ordnance maintenance companies serving at the same post or in the same vicinity.

b. The responsibilities of heavy maintenance companies include—

- (1) Accomplishing overflow work evacuated by direct support units for any reason. Unless replacement by a like serviceable item has already been accomplished, the heavy maintenance company will complete overflow work as promptly as possible, and will return the repaired item to the direct support unit from which it was received. If replacement has been made, the heavy maintenance company will repair the item for return to utility stock.
- (2) Exploitation of local resources to augment normal supply channels by means of work done on ordnance returned matériel received in collecting points. A part of the mission of each heavy maintenance company is to repair unserviceable but economically repairable major items received in collecting points for return to utility stock; to salvage unserviceable and uneconomically repairable major items for serviceable and repairable assemblies, subassemblies, and parts; and reclaim all components generated by the above operations in accordance with work objectives established by company and battalion supply officers.

119. ORDNANCE HEAVY MAINTENANCE COMPANY

a. *Mission.* The ordnance heavy maintenance company (army), T/O&E 9-9, reinforces and assists the divisional ordnance units and ordnance medium maintenance companies by accepting work beyond these units' capabilities, either because of the extent of the work required, or due to lack of time, manpower, or space or because of the tactical situation. This company performs field maintenance on small arms, artillery, instruments, and tracked or combat vehicles.

b. *Assignment.* Ordnance heavy maintenance companies are attached to ordnance battalion headquarters on the basis of the density of ordnance equipment encountered in various parts of the combat zone.

c. *Capabilities.* The ordnance heavy maintenance company is a semimobile ordnance maintenance company capable of accomplishing the third and fourth echelons of maintenance on all types of ordnance equipment, except army aircraft and wheel vehicles, found in the combat zone. Under normal conditions, one heavy maintenance company can provide heavy support for one armored division; three infantry divisions; or the corps troops of one corps. The tank platoon of the ordnance heavy maintenance company is designed to work on track vehicles. The individual repairmen, however, are all qualified in the maintenance of wheel vehicles before they specialize in track vehicles. If provision is made for the supply of assemblies

and parts for wheel vehicles, the ordnance heavy maintenance company can be employed in the field maintenance of wheel vehicles. The ordnance heavy maintenance company may also be employed in the depot maintenance of all types of ordnance equipment, except army aircraft, in a theater where depot maintenance battalions are not provided. This employment is advantageous when fixed shop buildings are not available and new construction is impractical, such as during the early stages of an operation or in a theater where a fixed depot system will not be established. Employment of ordnance maintenance companies in lieu of depot maintenance battalions will necessitate the issue of some depot maintenance tools and the supply of parts required for the fifth echelon of maintenance. The arrangement for the supply of additional tools and parts to enable the ordnance heavy maintenance company to engage in the fifth echelon of maintenance is an operational project which requires approval by the Theater Army Ordnance Officer.

d. Organization. The ordnance heavy maintenance company consists of a supply section and a service section organized into one platoon; an armament platoon; and a tank platoon.

120. HEAVY AUTOMOTIVE MAINTENANCE COMPANY

a. Mission. The ordnance heavy automotive maintenance company, T/O&E 9-197, accomplishes field maintenance of wheel vehicles and trailers, when the scope of maintenance work required is beyond the capabilities of direct support ordnance maintenance units in the combat zone.

b. Assignment. Ordnance heavy automotive maintenance companies are attached to ordnance battalion headquarters on the basis of the density of ordnance equipment encountered in various parts of the combat zone.

c. Capabilities. The ordnance heavy automotive maintenance company is a semimobile ordnance maintenance company capable of accomplishing the third and fourth echelons of maintenance on wheel vehicles. Under normal conditions, one heavy automotive maintenance company can provide heavy support for a combat force in an area containing 4,500 wheel vehicles, exclusive of trailers. The ordnance heavy automotive maintenance company may also be employed in the depot maintenance of wheel vehicles in a theater where depot maintenance battalions are not provided. This employment is advantageous when fixed shop buildings are not available and new construction is impractical, such as during the early stages of an operation or in a theater where a fixed depot system will not be established. Employment of ordnance heavy automotive maintenance companies in lieu of depot maintenance battalions will necessitate

the issue of some depot maintenance tools and the supply of parts required for the fifth echelon of maintenance. The arrangement for the supply of additional tools and parts to enable the ordnance heavy automotive maintenance company to engage in the fifth echelon of maintenance is an operational project which requires approval by the Theater Army Ordnance Officer.

d. Organization. The ordnance heavy automotive maintenance company consists of a company headquarters; a service section and a supply section organized into one platoon; and an automotive platoon.

121. RELATIONSHIP WITH DIRECT SUPPORT UNITS

The heavy maintenance companies of army ordnance service in the combat zone are the keystone of the field maintenance system. The capabilities of heavy maintenance companies are controlled and directed by the ordnance group commander to supplement the efforts of the division ordnance maintenance units and the direct support ordnance companies of army ordnance service. When the tactical situation requires the mobile ordnance units to displace, or otherwise causes their work to be interrupted, the heavy maintenance companies stand ready to evacuate incompleated repair jobs. Jobs that are beyond the capabilities of the mobile ordnance units for any reason are promptly evacuated to heavy maintenance companies where heavier equipment, more personnel, and a greater variety of heavy assemblies and slow-moving parts are normally available. A part of the utility stock of reserve major items available to the army is held by the heavy maintenance companies to enable prompt replacement of unserviceable major items evacuated by the division ordnance maintenance units and the direct support ordnance companies of army ordnance service. Unserviceable major items received in this manner are promptly repaired for return to the utility stock. In order to fix responsibility, improve service, and to permit the management of supply, the group commander will designate the mission of the heavy maintenance companies available to him in terms of the support of specific division ordnance maintenance units and direct support companies of army ordnance service. Until actual experience has been developed, it is normal for the heavy maintenance companies to expect to do 20 per cent of the third echelon of maintenance for supported mobile ordnance maintenance units and all of the fourth echelon of maintenance.

122. RELATIONS WITH DEPOT COMPANIES

Each battalion and group supply officer will determine the assemblies, subassemblies, and parts that can be obtained through salvage

and reclamation procedures in his area and will state a periodic requirement for these components as a guide for heavy maintenance companies.

123. RELATIONS WITH COLLECTING POINTS

The heavy maintenance companies are an important part of the ordnance returned matériel system and are normally identified with an ordnance collecting point, which serves as a source for the assemblies, subassemblies, and parts to be reclaimed. The operation of the ordnance returned matériel system is described in chapter 6. Ordnance heavy maintenance companies have limited capabilities for operating ordnance collecting points, and during field exercises and in theaters of operations where combat replacement factors are not being experienced, small ordnance collecting points may be operated by heavy maintenance companies as an additional responsibility.

124. ECONOMICAL REPAIR TIME LIMITS

Direct support units concentrate on returning the maximum number of quick repair jobs to supported using organizations and the evacuation policy is governed by the economical repair time limits established by battalion and group maintenance officers. As a result of this policy, it is estimated that approximately 20 per cent of the work received by division ordnance maintenance units and direct support companies will be evacuated to heavy maintenance companies. The heavy maintenance companies are equally concerned with obtaining the maximum return for the manhours they expend. Economical repair time limits may be established on the basis given below as a guide, however in combat it is quite likely that individual limits will be established for many items in short supply by the supply and maintenance officers concerned, since these officers are in a position to determine the price in manhours that they can afford to pay for major hours and assemblies.

Economical repair time limits, heavy maintenance companies

Matériel	Man-hours
Small arms	6
Medium and heavy artillery	48
Wheel vehicles	96
Tanks	128
Other track vehicles	96
Optical instruments	12
Power train assemblies	16
Engines	32

125. LOCATION OF HEAVY MAINTENANCE COMPANIES

The heavy maintenance companies must be located near enough to direct support units to insure against any undue loss of time incident to evacuation. While it is not desirable to displace heavy maintenance companies too frequently, it is apparent that distances of ten miles or more will normally add one to two additional days to the time that heavy ordnance equipment is out of service. At the same time, the semimobile heavy maintenance companies of the forward heavy support battalion should be held beyond the range of hostile medium artillery and normally cannot be accommodated forward of the corps rear boundary because of the restrictions in that area for bivouacs and the congested condition of roads.

126. STANDING OPERATING PROCEDURES

Standing operating procedures of the ordnance heavy maintenance companies will provide for the following:

- a. Ordnance equipment requiring heavy maintenance will be inspected immediately upon receipt.
- b. Priority for the repair of major items and the reconditioning of assemblies will be in accordance with the following:
 - (1) Overflow work evacuated by direct support units unless replacement has been made by a like serviceable item.
 - (2) Repair of major items for return to utility stock.
 - (3) Repair of major items and reconditioning of assemblies in accordance with requirements established by the battalion or group supply officer.
- c. Salvage and reclamation operations will be conducted in accordance with the requirements established by the battalion or group supply officer. Assemblies not programmed for reconditioning will be preserved and packaged for evacuation to the rear.

Section V. ARMY AIRCRAFT MAINTENANCE

127. GENERAL

Army aircraft are organic equipment in army, corps, division headquarters, and in some signal, artillery, armored, engineer, and transportation units. Because of the specialized nature of maintenance on this equipment and the relatively low density in which it is found in the combat zone, the light aviation maintenance company has been organized to provide field maintenance for army aircraft. Organizational maintenance is provided by the using organization and depot maintenance is a responsibility of the air force.

128. ORDNANCE LIGHT AIRCRAFT MAINTENANCE COMPANY

a. Mission. The ordnance light aircraft maintenance company, T/O&E 9-148, furnishes field maintenance support to army aircraft.

b. Assignment. Ordnance light aircraft maintenance companies are attached to ordnance battalion headquarters on the basis of the density of army aircraft encountered in various parts of the theater of operations.

c. Capabilities. The ordnance light aircraft maintenance company is capable of providing field maintenance support for approximately 150 light aircraft and associated aircraft equipment in the theater of operations.

d. Organization. The ordnance light aircraft maintenance company consists of a service section and a supply section organized into one platoon and one maintenance platoon. These sections and platoons include specialists trained in the army aircraft maintenance field, but the functions discharged by the service and the supply sections and by the maintenance platoon are similar to those performed by similar sections of other maintenance companies.

e. Operations. Operating procedures of the ordnance light aircraft maintenance company will provide for—

- (1) Participation in spot-check and technical inspections of army aircraft in the hands of supported using units. This may also involve maintenance instruction for organizational maintenance personnel.
- (2) Replenishment of army aircraft supplies consumed by organizational maintenance sections of the supported using units.
- (3) Repair of army aircraft and return to user or action to obtain replacement by a like serviceable item. Repair of components, such as wings, landing gear, tail-sections, instrument panels, and engines. Emphasis is placed on accomplishing the maximum number of repair jobs in order to conserve time that would otherwise be lost by evacuation to air force depots.
- (4) Assistance in battlefield recovery will be extended to supported using units for work beyond their capabilities.
- (5) Meeting all needs of the supported using units for ordnance service insofar as it pertains to army aircraft. It should not be necessary for a supported using unit to contact any other element of ordnance service or the Air Force to obtain maintenance or supply service for army aircraft.
- (6) Holding a reserve of army aircraft for replacement purposes. Companies are located at sites convenient to air strips and normally will receive army aircraft delivered by fly-away methods. This company may also be required to assemble army aircraft received in unit packs.

CHAPTER 5

SUPPLY

Section I. ARMY ORDNANCE DEPOT SYSTEM

129. GENERAL

a. The objective of the army ordnance depot system is to insure a steady flow of fast-moving assemblies, subassemblies, parts, and operating supplies to all echelons of maintenance in the combat zone; to replace unserviceable major items promptly by like serviceable items when repairs may be unduly prolonged; and to provide a central reservoir of the bulky assemblies and parts which are consumed at slow rates. Certainty of supply is an essential part of any supply system and the army ordnance depot system is designed to insure against any reasonable interruption to the supply system.

b. The army ordnance depot system maintains the level of supply prescribed by the theater army commander (see AR 710-25). The level of supply may be increased or decreased for certain types of supply, depending on the operations being planned, anticipated weather conditions, or other circumstances.

c. In armies, the level of supply includes only the stocks held by ordnance depot companies of the army. The basic loads of ordnance maintenance companies and the organizational allowances of using units are not included in the army level of supply. Major items held by maintenance companies for maintenance exchange are a part of the depot (utility) stocks of the army and are included in the level of supply held by the army.

d. Battalion and group supply officers, supervised by the army ordnance officer are responsible that ordnance depot companies do not pyramid supply requirements. The army, as a whole, is definitely limited to the number of days prescribed as the level of supply for the number of major items actually on hand with troops. The number of days of supply are divided among depot companies so that the total prescribed number of days of supply are not exceeded. Small fluctuations in the density of major items in the hands of troops are equalized by taking an average figure for a stated period of time.

130. ORDNANCE DEPOT COMPANY (Army)

a. Mission. The Ordnance depot company (army), T/O&E 9-57, receives, stores, and issues Class II and IV ordnance general supplies and equipment, except towed artillery and vehicles, used by an army in the field.

b. Assignment. Ordnance depot companies (army) are attached to ordnance battalion headquarters on the basis of the density of troops to be supplied and type of major items of equipment to be serviced.

c. Capabilities. The ordnance depot company (army) is a semi-mobile unit which can lift approximately 170 tons of ordnance general supplies per day in the semitrailer vans and cargo trucks authorized the company. While it can lift this tonnage, it cannot displace in one serial because of the limited number of truck-tractors provided.

d. Organization. The ordnance depot company consists of one depot platoon and one storage platoon.

e. Operations.

- (1) Ordnance depot companies (army) are normally grouped into two echelons in the combat zone. The rear echelon may consist of several ordnance depot companies attached to an ordnance battalion headquarters and assigned the mission of operating the army ordnance general supply depot. This depot serves as a single port of entry for all ordnance general supplies (except towed artillery and vehicles) received by the army. Normally, ordnance depot companies assigned to this depot will be given responsibility for one or more commodity groups. When four ordnance depot companies are employed on this mission commodity groups may be assigned as follows:

- (a) Ordnance SNL Groups A, B, C, D and F.
- (b) Ordnance SNL Group G-2 to 500, Inclusive (except G-27),
- (c) Ordnance SNL Group G-501, etc.
- (d) Ordnance SNL Groups G-27, H, J, K, L and miscellaneous.

- (2) The forward echelon of ordnance depot companies are those companies attached to the forward heavy support battalions. These ordnance depot companies replenish ordnance general supplies (except towed artillery and vehicles) consumed by the division ordnance maintenance units and the army ordnance maintenance companies. Normally, two ordnance depot companies will be located in close proximity to each other to support a single corps. Assignment of missions along the lines of commodity groups is not advisable for forward echelon depot companies because of the probability of transfers of these companies between armies. However, if a number of armored divisions are grouped for an operation of considerable magnitude, it may be desirable to require one or more ordnance depot companies to stock parts pertaining to the type of ordnance equipment involved to insure a highly specialized supply service for the operation.
- (3) Ordnance depot companies must retain their identity as

separate companies, so they can be transferred between battalions and armies as required. Normally, stock record cards are kept on the van with the supplies to which they pertain and stock records clerks are detailed to storage groups as required. There are three practical reasons for this:

- (a) Storage group chiefs become thoroughly familiar with all aspects of supply pertaining to their group. A degree of specialization is attained which facilitates interchangeability and improvisation.
 - (b) The risk of neutralizing the ordnance depot company through the loss of all the stock record cards as a result of enemy action is minimized. The loss of a part of the ordnance depot company will not jeopardize the operation of the entire company.
 - (c) The necessity for maintaining both stock record cards and locator cards is eliminated, thereby reducing an additional possibility for error between stock record cards and the stock actually on hand.
- (4) If centralized operation of the stock records sections of the depot companies is desired, the stock records sections may be assembled under the supervision of the battalion ordnance general supply officer, but should retain their identity as separate working sections. If it is deemed essential to assemble stock records cards in a central location, then locator cards must be prepared and held in each storage section by storage group chiefs.
- (5) The depot company, if fully supplied with all authorized supply, may have from 200 to 600 tons of ordnance general supplies in its custody. Operating procedures must provide for fast-moving essential supplies to be loaded in vans and for pooling available truck-tractors of other units to make it possible to go out of action late one day, displace during the night, organize new position, and be ready for operations early the next day. Supplies are brought up as rapidly as possible, utilizing pooled transportation of other units, especially ordnance recovery companies and army transportation corps truck companies.
- (6) The ordnance depot company will have in its custody a large stock of sensitive major items such as small arms, binoculars, and watches. Exceptional care must be exercised in the custody, security, and accounting for these items. A separate storage group, under a specially selected storage group chief is frequently desirable.

- (7) Plans for the evacuation, neutralization, and destruction of ordnance general supplies in the event of a major breakthrough by the enemy must be prepared in great detail, and the ordnance company must be trained to prevent capture and exploitation of its installation by the enemy.

Section II. ARMY ARTILLERY AND VEHICLE PARK

131. GENERAL

a. Towed artillery and vehicles are not handled by ordnance depot companies because of the maintenance problems involved. During combat, the responsibility for receiving, servicing, and distributing towed artillery and vehicles for a large force may be assigned to an artillery and vehicle park company, assisted by one or more ordnance maintenance companies. In a small force a maintenance company may be assigned this responsibility. When combat replacement factors are not being experienced, the army utility stock of towed artillery and vehicles may not be of sufficient size to require an artillery and vehicle park to be organized and such major items as are authorized may either be distributed among the maintenance companies or held by one maintenance company.

b. Towed artillery and vehicles are normally regulated items and the policy governing their issue is approved by the army commander and announced by the Army Ordnance Officer. Normally, 50 per cent or more of the utility stock of towed artillery and vehicles authorized the army should be distributed among the heavy maintenance companies for maintenance exchange. Care must be exercised that this flow is not depleted by issues for which there is no return. The replacement of battle losses is regulated by the Army Ordnance Officer and is normally limited to resources actually in the artillery and vehicle park.

c. All towed artillery and vehicles issued by the artillery and vehicle park must be ready for use. Artillery must be ready to fire, combat vehicles must be combat loaded with rations and ammunition, and signal equipment must be installed. This requirement is a major undertaking, which must normally be assumed by the Army, because of the probability of pilferage if artillery and combat vehicles are forwarded from communications zone parks with equipment mounted and supplies loaded. It is normal for signal corps personnel to be attached to the artillery and vehicle park to install and service signal equipment.

132. ORDNANCE ARTILLERY AND VEHICLE PARK COMPANY

a. Mission. The ordnance artillery and vehicle park company, T/O&E 9-137, receives, stores, and distributes the army utility stock of reserve towed artillery and vehicles. The company operates a small ammunition supply point and ration dump for the loading of ammunition and rations on combat vehicles before issuing them.

b. Assignment. Ordnance artillery and vehicle park companies are attached to ordnance battalion headquarters on the basis of the quantity of towed artillery and vehicles expected to be maintained as army reserve stocks in the combat zone. Normally, only one company is required per army or independent corps.

c. Capabilities.

- (1) The ordnance artillery and vehicle park company is capable of maintaining a reserve of 100 artillery pieces (including self-propelled) and approximately 1,000 vehicles, of which 40 per cent are expected to be combat vehicles. In each 30-day period, the unit is capable of receiving and distributing approximately twice this quantity of ordnance equipment.
- (2) In processing artillery and vehicles for issue and in performing care and preservation in storage on this ordnance equipment, the company must be assisted by ordnance field maintenance companies. Normally, an ordnance battalion, consisting of a battalion headquarters, an artillery and vehicle park company, and one or more ordnance medium maintenance and medium automotive maintenance companies, is charged with the operation of the artillery and vehicle park for an army in the field.

d. Organization. The artillery and vehicle park company consists of a park platoon and a distribution platoon.

- (1) The park platoon includes the inspection and maintenance section and the depot section. The inspection and maintenance section includes the specialists required to perform care and preservation in storage on items of ordnance equipment which have been processed by the field maintenance companies. The depot section includes the supply specialists and ammunition handlers to maintain property accountability for major items received and issued, to maintain a stockage of tools and accessories to replace items found to be missing; and to maintain stocks of rations, ammunition, and gasoline for use in combat loading vehicles.
- (2) The distribution platoon includes the personnel and equipment to deliver artillery and vehicles within the combat zone.

e. Operations.

- (1) The artillery and vehicle park company functions as a single "port of entry" into the army area for artillery and vehicles. Artillery and vehicles received from the communications zone will be receipted for and picked up on the stock record cards of the artillery and vehicle park company. Prior to placing major items in storage, all items are inspected and a work request and job order is prepared on matériel which is not in serviceable group A or B condition. The supporting ordnance maintenance companies are responsible for performing the maintenance required to place the major items in serviceable group A or B condition.
- (2) Provisions will be made for performing care and preservation in storage on major items and for evacuating items developing deficiencies beyond the capabilities of the artillery and vehicle park company to supporting ordnance maintenance companies.
- (3) The artillery and vehicle park company will maintain a stock of tools and accessories for replacement of any found missing on major items received. Stocks of rations, ammunition, and gasoline for combat loading vehicles will also be maintained.
- (4) Normally, replacement vehicles and artillery will be delivered to ordnance maintenance units or to designated using units. However, delivery may be taken at the artillery and vehicle park if directed by higher authority. Tank transporters and other transportation evacuating unserviceable matériel to the rear should be utilized to effect delivery to forward units whenever possible.

CHAPTER 6

ORDNANCE RETURNED MATERIEL IN THE COMBAT ZONE

Section I. BATTLEFIELD RECOVERY AND EVACUATION

133. GENERAL

a. During combat, equipment is damaged at an accelerated rate. The ordnance returned matériel system is an important part of the means for maintaining the combat strength of the army.

b. As a matter of policy, ordnance returned matériel is handled in maintenance channels rather than supply channels for the reason that depot companies do not have the specialists to designate as technical inspectors for classification of ordnance matériel.

c. The objective of the ordnance returned matériel system is to exploit local resources in order to reduce the demand on the supply system for new items. Local resources include abandoned, discarded, and battle damaged ordnance equipment of United States origin, and allied or captured enemy matériel of similar types.

d. Forward battle areas must be cleared of all abandoned or disabled equipment as quickly as the tactical situation permits. Combat units are responsible for battlefield recovery insofar as time and facilities permit. Their recovery facilities, however, frequently require augmentation by ordnance service. This assistance is provided by recovery companies of the forward direct support battalions. All unserviceable ordnance equipment collected from the battlefield or generated from other sources is evacuated to ordnance collecting points established near the corps rear boundary or in the army service area.

e. Frequently, ammunition will be found by ordnance recovery companies in equipment being collected on the battlefield. Evacuation of this ammunition will be coordinated with the nearest ammunition installation.

134. CAPTURED ENEMY MATERIEL (CEM)

a. The collection, evaluation, and handling of captured enemy matériel of types similar to United States ordnance matériel is an Ordnance Corps responsibility. This is an important mission and must not be neglected. Enemy matériel abandoned in combat operations aids the enemy if recaptured or if employed by a hostile civilian populace. Captured enemy equipment must be evacuated to ordnance collecting points where it can be guarded and disposed of or demilitarized. Ordnance personnel must be alert for items of enemy

matériel which represent new trends of development. Samples of these items are of major value to research and development personnel operating in the zone of the interior and may also have immediate tactical significance. Technical intelligence teams are assigned the specific mission of screening all captured enemy matériel within the command. They reconnoiter battle areas and ordnance collecting points and select captured enemy matériel which has an intelligence value. These teams are highly trained to select items which will contribute to research and development of new equipment or which may reveal trends of warfare and tactical or technical information of value to the command. Enemy matériel which is heavy or beyond the evacuation facilities of technical intelligence teams is marked as an intelligence sample for evacuation by ordnance recovery companies. Equipment falling into this category receives special handling and is evacuated as directed by the technical intelligence officer.

b. Captured enemy matériel which is not required for immediate use or for intelligence samples is either moved to ordnance collecting points or is demilitarized in place. Ordnance recovery companies should not waste their manpower in the unnecessary evacuation of enemy matériel and will normally limit their efforts to clearing roads, installations, and areas required for operations.

c. Care must be exercised in handling enemy matériel which may be booby-trapped, mined, or otherwise dangerous. Such equipment must be properly neutralized by explosive ordnance disposal personnel or by engineers. All captured enemy matériel must be considered as dangerous and handled with extreme caution. Weapons should be inspected to determine that they are unloaded before they are moved.

135. ORDNANCE RECOVERY COMPANY

a. *Mission.* The ordnance recovery company, T/O&E 9-187 augments the evacuation facilities of combat units and combat support units in the combat zone. The company operates a pool of recovery equipment to provide for battlefield recovery and evacuation of ordnance equipment.

b. *Assignment.* Ordnance recovery companies are attached to ordnance battalion headquarters on the basis of the number of ordnance collecting points to be established.

c. *Capabilities.* The ordnance recovery company is a mobile unit capable of providing recovery and evacuation facilities for an ordnance collecting point, which is located near the corps rear boundary or in the army service area.

d. *Organization.* The ordnance recovery company consists of a company headquarters and three identical recovery platoons.

- (1) The company headquarters consists of the headquarters, an operations and reconnaissance section, and a service sec-

tion. The operations and reconnaissance section include the operations, reconnaissance, clerical, and communications personnel necessary to locate, inspect, and record disabled and abandoned ordnance equipment and captured enemy equipment. This section furnishes information to the headquarters section or recovery platoons to enable appropriate recovery equipment to be dispatched. Radios are mounted on light trucks to provide reconnaissance parties with communication with the recovery platoons when telephone communication is not available. The service section includes the dispatcher, organizational mechanics, welder; and armorer necessary to dispatch vehicles and perform organizational maintenance on the company vehicles and armament.

- (2) Recovery platoon. Each of the three recovery platoons is capable of functioning separately for a limited period of time when augmented by food service and administrative personnel from the company headquarters section. An explosive ordnance disposal specialist is included in each recovery platoon for the purpose of neutralizing booby traps or mines that might be encountered in recovery operations. A tank recovery vehicle and several semitrailer transporters, truck tractors, wreckers, cargo trucks, light trucks, and trailers are provided in each recovery platoon for transporting special tools and equipment, supplies, personnel, and unserviceable ordnance equipment recovered or evacuated by the platoon. Radios are provided in light trucks to provide reconnaissance parties with means of communication when telephone communication is not available.

e. Operations.

- (1) Using organizations have primary responsibility for the recovery and evacuation of unserviceable or abandoned ordnance equipment. The ordnance recovery company assists the using organization by performing recovery and evacuation operations beyond the capabilities of the using organization. The ordnance company should not be required, or permitted, to assume the responsibility of the using organization for this function. Requests for assistance in battlefield recovery are made by the using organization to the ordnance maintenance company charged with direct support. Such requests are either passed on to battalion headquarters or directly to the recovery company.
- (2) The ordnance recovery company performs organizational maintenance of its own equipment. Field maintenance support will normally be furnished by an ordnance medium maintenance company attached to the same battalion.

- (3) Each recovery platoon will be prepared to operate separately and to accomplish its own reconnaissance. Operating procedures will provide for security and defensive measures will be taken by recovery crews when operations must be conducted under fire.
- (4) Recovered ordnance equipment will be evacuated to ordnance collecting points.
- (5) When not actually required for recovery operations, the recovery company may be required to assist ordnance depot companies and heavy maintenance companies in displacing forward by transporting some of their heavy assemblies. Tank transporters will normally haul heavy supplies and all orders dispatching transporters over the road should include instructions relative to loads to be hauled.

Section II. ORDNANCE COLLECTING POINTS

136. GENERAL

a. Ordnance collecting points are control points through which unserviceable and abandoned ordnance equipment is evacuated for classification and reclamation or for further evacuation. Ordnance equipment received in an ordnance collecting point is immediately classified by qualified technical inspectors of the reclamation and classification company and segregated according to serviceability. Under the supervision of the battalion maintenance officer, major items of ordnance equipment are distributed to appropriate heavy maintenance companies for repair. Armament and combat vehicles are distributed to heavy maintenance companies, while general purpose vehicles are distributed to heavy automotive maintenance companies. Major items or assemblies which are not economically repairable are salvaged for components when so directed by higher headquarters. All serviceable assemblies, subassemblies, and parts are cleaned and preserved and turned into appropriate depots for stock. Each battalion and group supply officer prepares a list of critical parts and assemblies needed and this list serves as a guide for collecting point personnel. Major items, assemblies, subassemblies, and parts which are not required or which are beyond the economical repair limit are preserved for evacuation to the communications zone. The unserviceable residue of the collecting point is turned over to the nearest quartermaster salvage office, or is left in place and the quartermaster salvage officer is notified.

b. Ordnance collecting points are not permitted to make any issues of serviceable matériel to either ordnance maintenance companies or to other units.

c. Explosive ordnance matériel is not kept in ordnance collecting points but is transferred to ammunition supply points at the earliest opportunity. Extreme care is essential in ordnance collecting points to prevent explosions, fires, and the accidental discharge of weapons.

137. CAPTURED ENEMY MATERIEL

Captured enemy matériel of types similar to United States ordnance equipment should be classified, segregated, and preserved in the same manner as United States ordnance equipment. When considerable quantities of captured enemy matériel can be collected, it represents an asset of great value to be used to supplement United States equipment or to arm allied troops. At the same time, care must be taken to prevent recapture by the enemy or diversion to guerillas or partisans. Plans for the destruction or demilitarization of captured enemy equipment must be prepared for use in the event of an enemy penetration.

138. ORDNANCE RECLAMATION AND CLASSIFICATION COMPANY

a. *Mission.* The ordnance reclamation and classification company, T/O&E 9-167 operates ordnance collecting points in the combat zone.

b. *Assignment.* Ordnance reclamation and classification companies are attached to ordnance battalion headquarters to operate ordnance collecting points near the corps rear boundary or in the army service area.

c. *Capabilities.* The ordnance reclamation and classification company is a semimobile unit capable of operating a collecting point for the receipt, inspection, classification, and segregation of unserviceable ordnance general supplies and similar captured enemy matériel, normally generated by a corps in combat. It performs minor repairs to ordnance general supplies, including the sectional repair of tires and tubes, preserves and prepares items of ordnance general supply for evacuation when major repairs are required, and disposes of the unserviceable residue.

d. *Organization.* The ordnance reclamation and classification company consists of a reclamation and classification platoon and a supply and evacuation platoon.

- (1) The reclamation and classification platoon consists of armament and automotive repairmen and tire rebuilders.
- (2) The supply and evacuation platoon consists of supply specialists to record, pack, and ship all serviceable or reclaimed items to designated ordnance general supply installations, and to preserve and package unserviceable but repairable items for shipment to designated field and depot

maintenance installations; and special vehicle operators to move heavy ordnance equipment within the ordnance collecting points.

e. Operations. Operating procedures of the ordnance reclamation and classification company will provide for—

- (1) Classification and segregation of matériel received at the ordnance collecting point in accordance with the supply categories previously outlined in Chapter 1. Matériel classified as belonging to unserviceable group C is further segregated as follows:
 - (a) Economically repairable with minimum effort and within capabilities of the classification and reclamation company.
 - (b) Repairable by supporting heavy maintenance companies.
 - (c) Repairable by depot maintenance units of the communication zone.
- (2) Preservation and preparation of matériel for evacuation to designated ordnance general supply or maintenance installations in accordance with priorities established by higher headquarters.
- (3) Minor repair of the maximum amount of unserviceable equipment, accessories, and spare parts consistent with the primary mission of classifying and evacuating matériel to other maintenance installations to insure that the backlog of unclassified matériel does not assume unwarranted proportions.
- (4) Repair and return to stock of tires and tubes requiring single section repairs and evacuation to tire repair companies of the communications zone those tires requiring re-treading or multiple section repairs.

f. Records and Reports. Records of items and their classification must be accurately maintained by the collecting point in order that reports required by higher headquarters may be submitted. The summary of collecting point activities (fig. 5) is the basis for preparation of disposition instructions issued by higher headquarters.

SUMMARY OF COLLECTING POINT ACTIVITIES

UNIT DESIGNATION _____

PERIOD: FROM _____

TO _____

ITEM	RECEIVED LAST 24 HOURS						DISPOSED OF LAST 24 HOURS					BALANCE ON HAND				
	SERVICEABLE	REPAIRABLE, MINOR REPAIRS	REPAIRABLE, HEAVY MAINTENANCE	REPAIRABLE, DEPOT MAINTENANCE	FIT FOR SALVAGE ONLY	TOTALS FOR TODAY	SERVICEABLE, TURNED IN TO DEPOT	TO HEAVY MAINTENANCE	TO DEPOT MAINTENANCE	SALVAGED FOR COMPONENTS	TOTALS FOR TODAY	REPAIRABLE, MINOR REPAIRS	REPAIRABLE, HEAVY MAINTENANCE	REPAIRABLE, DEPOT MAINTENANCE	FIT FOR SALVAGE ONLY	TOTALS COLS. 13-14-15-16
NOTE: 1. LIST ORDNANCE ITEMS BY GROUP ACCORDING TO ORDNANCE CATALOG 2. LIST ITEMS OF OTHER TECHNICAL SERVICES BY BRANCH 3. LIST CAPTURED ENEMY MATERIEL BY NATIONALITY OF ORIGIN	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1																

Figure 5. Summary of collecting point activities.

PART III

ORDNANCE MAINTENANCE AND GENERAL SUPPLY IN THE COMMUNICATIONS ZONE

CHAPTER 7

FIELD MAINTENANCE

139. GENERAL

a. Direct support and heavy maintenance in the combat zone were covered in chapter 4 of this manual. In the communications zone, the capabilities of both direct support and heavy maintenance are combined into one company, the ordnance field maintenance company.

b. The responsibilities and standing operating procedures of the ordnance field maintenance company are the same as those outlined for direct support ordnance companies and the heavy maintenance companies in chapter 4.

140. ORDNANCE FIELD MAINTENANCE COMPANY (T/O&E 9-357)

a. *Mission.* The ordnance field maintenance company, T/O&E 9-357, provides both direct support and heavy maintenance in the communications zone.

b. *Assignment.* Ordnance field maintenance companies are attached to ordnance battalion headquarters on the basis of the density of ordnance equipment encountered in various parts of the communications zone and the length of main supply routes.

c. *Capabilities.*

- (1) The ordnance field maintenance company is a semimobile ordnance maintenance company capable of accomplishing the third and fourth echelons of maintenance on wheel vehicles and small arms of service units in the communications zone. Under normal conditions, it is capable of providing both direct support and heavy maintenance for the equivalent of 2,000-wheel vehicles and the small arms normally encountered in service units in the communications zone. In assessing the capabilities of the ordnance field maintenance company, reference should be made to the vehicle equivalents prescribed in SR 310-30-1. Engineer dump trucks, unless otherwise prescribed, should be considered as two vehicle equivalents.

- (2) When assigned to a mission characterized by maintenance along main supply routes, the ordnance field maintenance company may be assigned responsibility for approximately 150 miles of main supply road, as well as the direct support and heavy maintenance of units stationed on and near the main supply road.
- (3) When combat equipment is present in the communications zone, the capabilities of the ordnance field maintenance company may be augmented by the attachment of cellular units organized under T/O&E 9-500, or suitable armament maintenance units such as medium maintenance companies and heavy maintenance companies may be provided. This is especially true when concentrations of antiaircraft artillery are located in the vicinity of the ordnance field maintenance company.

d. Organization. The ordnance field maintenance company consists of three direct support platoons and one heavy maintenance platoon. The three direct support platoons are identical and are capable of operating separately.

e. Employment. Field maintenance companies may be employed in any one of three ways—area support, unit support, or support of specific types of equipment.

- (1) Area support provides service to all equipment found in a designated area. This is the most usual method of employment.
- (2) Unit support provides service to designated units. Antiaircraft artillery in the communications zone is normally supported by a field maintenance company augmented by artillery and fire control maintenance teams which are charged with the support of designated artillery units.
- (3) In metropolitan areas, where several companies are located in close proximity, it may be desirable to assign certain companies to specialized missions for the support of specific types of equipment. Examples would be the employment of a field maintenance company for the repair of amphibious vehicles or passenger vehicles to the exclusion of other types of equipment.

141. MOTOR VEHICLE ASSEMBLY COMPANY

a. Mission. The motor vehicle assembly company, T/O&E 9-348, assembles and prepares for issue ordnance transport vehicles which are shipped into the theater of operations unassembled.

b. Assignment. Motor vehicle assembly companies are normally

assigned in the communications zone as part of a battalion containing ordnance park and ordnance distribution companies.

c. Capabilities. The company is capable of assembling 28 vehicles per day based on the standard 2½ ton truck, twin unit pack (TUP). Eighty-five vehicles per day can be assembled based on the other standard military vehicles in single unit packs (SUP). Daily capacity will vary with the type of vehicles being assembled and the type of packaging.

d. Organization. The motor vehicle assembly company consists of a company headquarters platoon, an assembly platoon, and a service and supply platoon.

e. Operations.

- (1) The company should be located as near as possible to a port or railhead. Personnel and equipment of the assembly company assist transportation units in unloading boxed vehicles in the company storage area. Identification and segregation of the units is required upon receipt to obviate the necessity for excessive handling. Single unit packs will be segregated and placed to facilitate immediate assembly in place or, if not called for in production schedules, will be stored so as not to interfere with current operations. Twin unit packs normally consist of four boxes per unit. These boxes must be segregated and stored to facilitate assembly line operations, i.e., frames and wheels stored near the place where they will enter the assembly line and bodies in an area where they will be nearest their point of assembly.
- (2) Assembly operations and procedures should be planned by the company for each type vehicle and pack which the company is required to assemble. It is more efficient to assemble only one type vehicle at a time. Since the TUP will usually predominate and requires more man-hours of operation to assemble, a typical assembly schedule might be 4 days on TUP's and 2 days devoted to group assembly of other type vehicles. Priority of assembly, however, will be governed by current demand as directed by higher headquarters.
- (3) Primary consideration must be given to construction of facilities to expedite operations. These should include the assembly line, service shop, layout of storage area for both boxed and completed vehicles, plans for the disposition of empty crates and boxes, and the resultant scrap matériel developed in unpackaging operations. The latter matériel is extremely bulky and its continuous removal is essential to prevent blocking of assembly operations. Such temporary storage areas must be established adjacent to the company

area. Salvage or disposal of this matériel will be as directed by higher headquarters or in accordance with theater policies.

142. MAINTENANCE AREAS

a. Except for those companies employed to support designated units or specific types of matériel, field maintenance companies operate on an area basis. Each unit is assigned a specified maintenance area by battalion or group headquarters and is responsible for the repair of all equipment found in that area regardless of whether it belongs to a local unit or to another command. Transients in that area requiring third echelon of maintenance service are a responsibility of that company. The company is responsible for road patrol and wrecker service on those portions of major highways lying within its areas. The location of road patrol and wrecker detachments is coordinated with the military police and transportation corps so as to provide an integrated service.

b. The principle of area support requires that a field maintenance company provide service for all equipment in its area and that every point in the communications zone be included in the maintenance area of some company.

c. Maintenance areas are apportioned according to density of equipment supported, with due consideration to the estimated transient load. The communications zone (or section) is apportioned among the ordnance groups. These areas are subapportioned by groups and battalions so that each company has approximately the same work load.

d. Every unit of the command and each unit located within the territorial limits of the command is furnished the designation of the maintenance company responsible for its support. When a unit moves, it is informed of its new source of support and the organization's record of services is transferred from the old to the new supporting company (par. 237). It is emphasized that when the vehicles of a unit are away from their home area, assistance will be rendered by the company in whose area they find themselves.

e. As troop strength increases or decreases, or as units move, the maintenance load will shift. It is necessary from time to time to re-apportion the maintenance area and to move maintenance companies to new localities to match the support to the shifting population.

143. SUPPORT OF LINE OF COMMUNICATION TROOPS, INCLUDING AAA

Combat troops may be located in the communications zone for protection of installations and lines of communication from attack by the enemy or by partisans. Combat troops may be under the

command of the communications zone, a logistical command, or a tactical command. In either case, their support is a responsibility of the communications zone unless otherwise directed. Support of such units may be rendered by field maintenance companies augmented by the attachment of maintenance teams organized under T/O&E 9-500, by field maintenance companies specially trained and equipped for the purpose, or by medium and heavy maintenance companies from available theater maintenance facilities.

144. SUPPORT OF ARMY ORDNANCE UNITS

It is sometimes desirable to employ in the forward area of the communications zone a "forward battalion" to supplement the field maintenance activities of army units. Army units often become overloaded with work which cannot be completed before their shops must be moved to new locations. Such equipment must be evacuated to the rear. A forward battalion can cushion such peak loads by accepting the overflow. Although the forward battalion need not move as frequently as army units, it must be prepared to move much more often than is normal for the field maintenance company. It should, therefore, be made up of army type units and may include armament as well as automotive maintenance units.

145. SUPPORT OF COMBAT UNITS

Combat division and smaller units moving through the communications zone to or from the front, or located therein during mounting operations, are a maintenance responsibility of the communications zone. Usually, however, such troop concentrations will include a proportionate share of army type ordnance units, which should be employed to the fullest in meeting their needs. A minimum of additional maintenance support will be required and can usually be furnished by field maintenance companies.

CHAPTER 8

DEPOT MAINTENANCE

Section I. ARMAMENT REBUILD

146. ORDNANCE ARMAMENT REBUILD BATTALION, T/O&E, 9-315

The rebuild of major items, the reconditioning of assemblies, and the reclamation of tools pertaining to combat vehicles, artillery matériel, fire control instruments, and small arms used in the theater, is the responsibility of the ordnance armament rebuild battalion, T/O&E 9-315. The equipment of the battalion generally will be installed in separate shop buildings of a permanent nature, normally located in the base section of the communications zone.

147. ORGANIZATION

The ordnance armament rebuild battalion, T/O&E 9-315, consists of the following units:

a. Headquarters, headquarters and service company, T/O&E 9-316. The headquarters section provides the personnel for command and administration of the battalion, including management of production control for all shops within the battalion. The headquarters and service company provides personnel for company administration and the personnel and equipment to support all shop operations required but not included in other units of the battalion.

b. Combat vehicle company, T/O&E 9-317. This company is responsible for depot maintenance of combat vehicles and their assemblies. All work on the combat vehicle line, other than chassis and hull repair, is done on a replacement rather than repair basis. Assemblies, subassemblies, and accessories generated by the vehicle line are reconditioned by other companies of the battalion.

c. Armament and fire control company, T/O&E 9-318. This company performs the depot maintenance of artillery, fire control instruments, small arms and automatic weapons. The employment of production line methods will be used where feasible, especially in the processing of small arms.

d. Engine and power train company, T/O&E 9-319. This company rebuilds engines and related accessories; power train units and accessories; and assemblies and subassemblies incident to the rebuild of the complete major item. The mission of this company is primarily to support the combat vehicle company, but it may be required to rebuild like items for return to depot stocks.

148. MISSION

General mission of the armament rebuild battalion is to rebuild unserviceable armament generated within the theater. In accomplishing this mission, it performs the following functions:

a. It performs depot maintenance (fifth echelon) on armored vehicles, artillery, fire control instruments, and small arms primarily for augmentation of supply depot stocks.

b. It is responsible for the reclamation of tools, equipment, and accessories related to armored vehicles and armament.

c. It performs the modification of matériel when required and as directed.

d. It may be used for heavy support of combat units passing through the communications zone.

149. OPERATIONS

The shops of the rebuild battalion are set up to operate wherever possible on a production line basis, since this method is more economical than performing the work on a job shop basis. The operations of the battalion conform with those shown for the depot maintenance organizations described in chapter 12 of this manual.

Section II. AUTOMOTIVE REBUILD

150. ORDNANCE AUTOMOTIVE REBUILD BATTALION, T/O&E, 9-325

The reconditioning of assemblies, the reclamation of tools and equipment pertaining to general and special purpose vehicles, and maintenance operations beyond the capabilities of field maintenance organizations is performed by the ordnance automotive rebuild battalion, T/O&E 9-325. Management of battalion operations will normally conform with that shown in chapter 12 of this manual.

151. ORGANIZATION

The ordnance automotive rebuild battalion, T/O&E 9-325, consists of the following units:

a. Headquarters, headquarters and service company, T/O&E 9-316. This company is organic to both the armament rebuild battalion, T/O&E 9-315 and the automotive rebuild battalion, T/O&E 9-325. Its organization (par. 147a) is the same in each case.

b. Ordnance engine company, T/O&E 9-327 (2 ea). These two companies rebuild engines of conventional general purpose vehicles. When necessary, engines of any type or size may be rebuilt, subject to availability of necessary special tools and spare parts.

c. Ordnance power train company, T/O&E 9-328. This company rebuilds chassis and power train units and accessories, and subassemblies related thereto. Power train units and chassis components rebuilt by this company are normally of the general purpose vehicle type.

152. MISSION

The general mission of the automotive rebuild battalion is to rebuild unserviceable general and special purpose vehicle assemblies and subassemblies generated within the theater. In accomplishing this mission, the battalion—

a. Reconditions general purpose automotive vehicle engines and related subassemblies and accessories.

b. Reconditions general purpose automotive vehicle power train assemblies and related subassemblies.

c. Reclaims tools, equipment, and accessories related to general purpose automotive vehicles.

d. Reclaims parts from uneconomically repairable assemblies.

e. Modifies matériel as directed.

f. Fabricates critical parts as required.

153. OPERATIONS

The shops of the automotive rebuild battalion handle a large volume of assemblies, such as engines and power train units, which are reconditioned to standard dimensions. A series of independent operations is involved and these are most economically handled by production line methods, although some sections within the shop may use job shop or bench shop methods where operations cannot be broken down into single repetitive stages. The major sources of assemblies to be reconditioned are the collecting point companies and the field maintenance companies. Normally, matériel to be reconditioned will be stored at the collecting points until such time as the rebuild battalion headquarters makes a call for it. Priorities for reconditioning assemblies and disposition instructions for excess and surplus assemblies will normally be controlled by the ordnance officer of higher headquarters. Matériel which is on the critical list in the theater normally will have priority over other assemblies.

Section III. TIRE REPAIR

154. ORDNANCE TIRE REPAIR COMPANY (T/O&E 9-347)

This company is designed to operate tire repair shops in the communications zone and is responsible for retreading and the sectional repair of all sizes of pneumatic tires and for the repair of tubes.

Under normal conditions this company supports a total of 30,000 to 40,000 wheel vehicles of all types.

155. ORGANIZATION

The ordnance tire repair company, T/O&E 9-347, consists of a company headquarters and two repair platoons each capable of operating independent of the other. The company headquarters contains an administrative section and an operations office for control and supply of the repair platoons.

156. OPERATIONS

a. The company usually sets up two shops having almost identical equipment in each. Thus, the destruction of or damage to one shop would not completely incapacitate the company. Shops may be set up in the same area or at separate locations within reasonable distance when the situation or available facilities so dictates.

b. The majority of tires will be received from ordnance collecting points and maintenance companies and after repair will be returned to depot stocks. Occasionally, using units may be authorized to bring in odd sizes of critical tires, such as earth mover and warehouse tractor tires for repair and return to user. In order to keep a complete and accurate record of type and sizes of tires on hand at any time, all tires should be receipted for and picked up on stock cards by size and type. All tires shipped out, either as scrap or serviceable, should have appropriate notations posted to the stock cards. The methods used in tire and tube repair are covered in TM 9-1868.

c. The platoons are identical as to personnel, but certain equipment which is necessary on the basis of one item per company is divided between the two platoons for operational purposes. It should be noted that equipment and personnel are provided to permit 24-hour operation of the supply and the tire repair platoons, since continuous operation is necessary to produce optimum results. Overlapping shifts permit the continuous operation of the equipment from one shift to the next regardless of whether tires in molds are completed at the end of any one shift. Steam and air pressures are constantly maintained and vulcanizers are always ready to receive tires. Loss of time between shifts will require certain machines to be shut down prior to the end of the shift if sufficient time is not allowed to completely cure a tire. Similarly, time will be lost at the beginning of each shift to raise steam pressure and air pressure to the proper levels. If the demand on the company is such that only part-time operation is necessary, it is more efficient to reduce the amount of equipment in use and to schedule operation of the balance on a 24-hour schedule.

CHAPTER 9

SUPPLY

Section I. ORDNANCE CLASS II AND IV SUPPLY DEPOTS

157. GENERAL

a. Ordnance class II and IV depots are organized to receive, store, and distribute ordnance general supplies. The artillery and vehicle park is an ordnance class II and IV depot, but for clarity it is normally referred to as an ordnance park. Parks are covered in section II of this chapter.

b. The functions of ordnance class II and IV depots are—

- (1) To clear ports promptly, so as to reduce their vulnerability and to permit other shipments to be received.
- (2) To disperse stocks to insure against the total loss of any item or type of supplies.
- (3) To accumulate balanced stocks to support operations.
- (4) To distribute ordnance general supplies to other depots and major commands.
- (5) To issue ordnance general supplies to designated field and depot maintenance units.

158. CLASSIFICATION

a. Depots are classified according to command responsibility for their operation, organization, and type of supplies issued.

b. The terms "army depot" and "communications zone depot" indicate clearly the commands responsible for their operation.

c. When classified as to organization, depots are classified either as branch depots (stocking supplies stored by a single service) or general depots (stocking supplies stored by two or more services). Branch depots are the type normally used, especially in the case of ordnance where stocks are large. Although organization is different, the principles of supply are the same in an ordnance depot or the ordnance section of a general depot.

d. When classified as to type of supplies stored, the designation class I, class II, class III, class IV, or class V is used. Class II and IV supplies are usually stored together. Otherwise, the various classes are stored separately. Since ordnance general supplies consist entirely of classes II and IV, the designation is usually omitted in describing ordnance depots. Depots storing artillery and vehicles are called parks and are described in section II of this chapter.

e. Depots are further described as to their location—base, advance, or intermediate. They are usually established in that order and the location, together with a serial number, is usually a part of the depot title (e.g., Ordnance Base Depot No. 1; Ordnance Advance Depot No. 3).

159. OPERATIONS

The depot system operates generally as follows: Ports and air-heads are cleared as rapidly as possible by movement of supplies into base depots or to installations further forward. Base depots transfer supplies forward as directed. Advance depots receive their stocks from their rear or in some cases by direct shipment from the port and issue them to army depots as directed. Intermediate depots provide a means of dispersing theater reserves. They receive their stocks from the rear and transfer them as directed to depots further forward, including army depots. Stocks are transferred among depots on transfer orders issued by section or communications zone ordnance officers or by the theater stock control agency. Any or all depots may be designated as issue depots for specified units.

160. STOCK LEVELS

Quantitative stock levels of each depot are prescribed by the appropriate ordnance staff officer. The stockage objective of the theater is maintained by requisitions submitted on the zone of the interior by the theater stock control agency, by the output of ordnance depot maintenance shops, by local procurement, and by the turn-in of serviceable supplies excess to troop requirements. Depot stocks are replenished by receipts from the above sources and by transfers from other depots. Such transfers may result from requisitions authorized to be placed upon other designated depots or from transfers directed by the theater stock control agency in order to reduce excess stocks of a depot, to restore depleted levels, or to disperse or redistribute the theater reserves to meet logistical or tactical needs.

161. ORDNANCE SUPPLY DEPOT COMPANY (T/O&E 9-367)

a. *Mission.* The ordnance supply depot company (communications zone), T/O&E 9-367, receives, stores, and issues class II and IV ordnance supply. Normally, a part of an ordnance depot administered by a headquarters and headquarters detachment ordnance depot battalion, T/O&E 9-76, or capable of operating a small satellite or issue depot alone.

b. *Assignment.* Ordnance supply depot companies (communications zone) are assigned to communications zone, and attached as required.

c. *Capabilities.* The company is capable of receiving, storing, and issuing approximately 170 tons of bulk ordnance class II and IV supplies per day, including intradepot movement incident thereto. This is the basic unit for the supply of ordnance general supplies (less towed artillery and vehicles) in the communications zone. In exceptional cases only, one company may operate a small issue depot. However, it is normal for several companies to be combined under a headquarters and headquarters company, ordnance battalion for the operation of an ordnance depot. The operations of such a depot are described in chapter 13 of this manual.

d. *Organization.* The ordnance supply depot company (communications zone) consists of a company headquarters, stock record section, storage office section, receiving and shipping platoon, and two warehouse platoons.

Section II. ARTILLERY AND VEHICLE PARKS

162. GENERAL

Towed artillery and vehicles constitute a large part of the weight and bulk of ordnance general supplies. They require large storage areas and present special problems in receipt, issue, and care and preservation in storage. To overcome these problems, there is a need for an organization with skills and equipment not required in other depots. Installations for the storage of this matériel are called parks. As in the case of other depots, parks may be classified as base or intermediate ordnance parks through which towed artillery and vehicles are moved forward for the ultimate delivery to army parks. Stocks of towed artillery and vehicles are received, transferred, and issued in much the same manner as other ordnance supplies.

163. ORDNANCE PARK COMPANY (T/O&E 9-359)

a. *Mission.* The ordnance park company, T/O&E 9-359, receives, prepares for issue, stores, maintains in storage, and issues major items of wheeled and tracked vehicles and artillery, towed or self propelled, to army or communications zone parks, other units, or as otherwise directed.

b. *Assignment.* Assigned to communications zone on the basis of one company per 3,000 major items (artillery or vehicles) to be received, stored, and issued per month.

c. *Capabilities.* Capable of operation of a park containing 5,000 major items with an average turn-over of two-thirds of this amount each month, the remainder held as theater reserve stock.

d. *Organization.* The ordnance park company consists of a company headquarters, a storage platoon, and a maintenance platoon.

e. Operations. This company is employed in the communications zone for the receipt, storage, care and preservation in storage, and issue of towed artillery and vehicles. Items received in damaged condition are repaired by the ordnance park company. An ordnance distribution company, T/O&E 9-337, is normally associated with the park company to distribute towed artillery and vehicles and to remove items from the port. If vehicles are received crated, an ordnance motor vehicle assembly company, T/O&E 9-348 must also be associated with the park. These companies are grouped together under a battalion headquarters which may also command ordnance companies of other types working on other missions but located in the area. Base park operations differ from those of advance parks only in the association of an assembly company and the source of its stock—generally from a port and vehicle assembly lines. The following discussion of base park operations is thus inclusive of those of other parks.

164. RECEIPTS

a. From the Port. Matériel is received at the port from ships and moved to an in-transit service point in the port area where it is prepared by small crews for driving, towing, or hauling to the park. This preparation includes removal of waterproofing, gas, and oil check, etc. The matériel is then delivered by park personnel to the vehicle and equipment park. Matériel then moves along to an inspection station where it is inspected and classified. The classification is placed on the shipping document accompanying the matériel which then goes to the park office where it is assigned a register number (debit voucher) and posted in the register. It is then posted to the stock record account. An index card for all matériel is prepared showing the index number of the item by type, nomenclature, U.S.A. registration number, and voucher number. This card is maintained in a "stock" file by type and kept posted with changes in classification while in stock. This card file provides the only means of quickly and accurately knowing the disposition of matériel in or having passed through the park. It is useful to higher headquarters and military police in tracing accountability for matériel.

b. From Assembly Company. Crated vehicles and artillery may first move to an assembly company and then be turned over to the park company where it is handled similar to matériel received directly from the port. In any event, coordination between the port, assembly plant, and park is maintained by liason with the port ordnance officer.

c. From Using Units. Matériel may be received from using units due to changes in T/E, excess of T/E, or inactivation of the unit.

165. INSPECTION

a. All matériel received is routed through the appropriate sections of an inspection line established in the shop area. The inspection line is usually divided into sections as follows:

- (1) Section I. Inventory.
- (2) Section II. Instrument, small arms, and artillery.
- (3) Section III. Automotive.
- (4) Section IV. Signal Equipment (Signal personnel will normally be attached when required).

b. Matériel arriving in the shop area is received in section I. Technical inspection forms are prepared and an inventory is taken of the major items of equipment of the vehicle or artillery piece. Any shortages or necessary modifications are recorded on the forms. Accessories and spare parts packed in one or more boxes will be picked up on the inventory list according to items and quantities listed on shipping tickets, shipping documents, or packing lists, and the boxes normally will not be opened and checked until it is being prepared for issue (par. 167*a*(4)). These forms are attached to the vehicle or artillery and sent to section II.

c. In section II, an instrument crew, a small arms crew, and an artillery crew take over, inspect, and make any necessary repairs to the pertinent items, recording the necessary information on the technical inspection forms attached. If repairs requiring a considerable length of time must be made either in this section or in section III, the vehicle or artillery piece is withdrawn from the inspection line and sent to the appropriate maintenance section of the company shop where it will be repaired and returned to the inspection line. A lubrication crew will lubricate all matériel while in section II. Before leaving this section, the matériel is inspected for cleanliness and orderly placement of equipment. Upon completion of the inspection in section II, vehicles will be delivered to section III by the artillery crew. In the event that the other crews finish their work before the artillery crew, the latter group may accompany the vehicles to section III and complete their operations there.

d. In section III, the fuel and oil levels are tested and the results recorded on the inspection forms. The automotive crews make a complete inspection and accomplish any necessary repairs. All repairs and adjustments made must be recorded on the inspection forms.

e. When all inspection checks and necessary repairs have been completed, the matériel is again inspected for cleanliness and orderliness and, if required, delivered to the supply area for combat loading. The matériel is then returned to section I and given a final check by the shop officer. The shop officer will assure himself that the technical inspection forms have been properly completed and will send

them to the company files. The matériel which is not being issued immediately is then sent to storage.

166. STORAGE

a. Technical Inspections. All matériel will have been inspected prior to being placed in storage and will have inspections at regular intervals thereafter. A suitable record will be kept with the matériel and kept up to date by the inspector who will indicate the condition of the item and any work which may be required. Minor work on surface preservation will be accomplished at the earliest practicable date. A tag fastened to the matériel will indicate the status of serviceability or unserviceability.

b. Component Parts. Items such as batteries, seat cushions, and lamps which may be removed for separate, protected storage, should be in serviceable condition and tagged to show the vehicle to which they belong before being stored.

c. Reference. For detailed information on the storage of vehicles, parts, assemblies, and accessories, see AR 700-105 and SB 9-63.

167. ISSUES

a. General. Authority for an issue is normally an issue directive or credit received from higher headquarters. A directive to issue will carry an ordnance shipping number and indicate the ordnance support unit and/or the using unit to receive the item. This will usually be presented by the representative of the unit requiring the item. Four file boards will normally be maintained on issues.

- (1) *Will call.* For items listed on issue directives received by mail or that cannot be filled at time presented.
- (2) *In process.* For items listed on issue directives upon which the work on preparing the item for issue is in process.
- (3) *Partially filled.* For issue directives which could not be completely filled because all items were not available or unit could not take all items at one time.
- (4) *Filled.* When an issue directive is received, the information is furnished to the proper lot and to the outgoing checkers on the issue line or awaiting issue line. This information consists of the issue directive shipping number, quantity, type, and class of item to be issued. Matériel is moved by lot personnel to the issue line where it is checked for completeness of tools and accessories. Any shortages, if unable to be filled, are noted on a shortage list which is given to the using unit as a basis for a requisition on its supply agency. The checker submits a list of the U.S.A. registration numbers of the matériel selected for issue by types, showing the

shipping number and a notation after each U.S.A. registration number as to whether the item was issued complete, the shortages, and the class of the item issued. With this list as a basis, the office prepares the necessary shipping documents.

b. Regulated Items. Matériel listed on the theater regulated items list is issued only upon approval of the headquarters retaining control of issue in accordance with allocations, credits, or priorities established for the using unit.

c. Credits. Credits are issued by headquarters making allocations to provide commanders with definite assurance that the supplies are available to them and to guide supply agencies in their issue. When the notice of a credit is received, the stocks are dropped from the stock record account with the notation "credit" and the shipping or credit number is posted to it. The stock is stenciled with the identifying number taken from the credit notice. The stock is then segregated and held until final shipment. The daily list of major items will not show credits. Supplies listed on credits are subject to call or draft by the commander or unit to whom the credits are given. In order to insure that items are not dropped again when called for or shipped, the notation "credit" is written across the shipping document.

168. STOCK RECORDS

Stock record cards should be made for each major item and major item combination by type and model. If vehicles and artillery weapons which ordinarily are carried as major item combinations are also carried as major items without equipment, tools, and accessories, other stock record cards are maintained for these major items. When equipment, tools, or accessories are drawn from supply depots to make a major item a complete major item combination, the complete vehicle or artillery major combination is picked up on the appropriate stock record card.

169. COMBAT LOADING

Combat loading of matériel may be done by communications zone parks or army parks. Normally, it will not be done by the communications zone park due to the amount of pilferage encountered during shipment. Frequently, the loading may not be as desired by the recipient and, therefore, would require changing when it finally reached its destination. The final decision on where combat loading will take place will normally be made by mutual agreement between the ordnance staff officer of the communications zone and the armies. The artillery and vehicle parks charged with combat loading must insure

that sufficient stocks of ammunition, rations, etc., are on hand to facilitate loading according to changing requirements.

170. DELIVERY TO COMBAT ZONE

Wheel vehicles will be delivered to the combat zone area by driving. Track vehicles, however, will normally be transported by rail or tank transporter. Artillery will normally be towed to its destination. In the army area, artillery and vehicles will be delivered to the army park or other designated receiving point.

Section III. ORDNANCE OFFICER, TRANSPORTATION CORPS PORT

171. PORT ORDNANCE OFFICER

a. The oversea port headquarters units of the Transportation Corps, T/O&E 55-110-1 (major) and 55-120-1 (medium) each include an ordnance section as part of the staff.

b. The port ordnance officer as chief of the ordnance section is a member of the port commander's staff. He acts as technical advisor to the port commander and to the various operating sections in all matters relative to the inspection, classification, movement, and distribution of ordnance matériel passing through the port. He insures that prescribed safety precautions and practices are employed in the handling and storage of ammunition and other explosives and in the removal or other disposition of duds found in the port area. He advises on special precautions to be taken in the unloading of ordnance supplies.

c. He is charged with requisitioning, receiving, inspecting, storing, maintaining, and repairing ordnance matériel used in the operation of the port and its installations. He may be required to maintain a stock of ordnance supplies of emergency character for issue to units and personnel passing through the port.

d. He will maintain close liaison with the communications zone or section ordnance officer and advise him promptly of expected ship arrivals and the ordnance content of ship's manifests. He will co-operate in the procurement and direction of transportation and labor for the orderly and expeditious removal of ordnance supplies from the port area according to established plans. He will advise and assist in the direction of the inloading and outloading of ordnance supplies to prevent damage and to insure safety in transit.

e. He is responsible for the security of ordnance supplies arriving in the port area under classified or other special security regulations.

f. He is responsible for the operational control of any ordnance units which may be attached to the port headquarters.

CHAPTER 10

ORDNANCE RETURNED MATERIEL IN THE COMMUNICATIONS ZONE

Section I. GENERAL

172. APPLICATION

Within the communications zone, ordnance returned matériel consists mostly of that matériel evacuated from the combat zone. Ordnance returned matériel generated in the communications zone is handled and processed the same as that originating within the combat zone. The principal organizations concerned with the handling of such matériel are the ordnance distribution company, T/O&E 9-337, and the ordnance collecting point company, T/O&E 9-358.

173. ORDNANCE DISTRIBUTION COMPANY (T/O&E 9-337)

a. Mission. The ordnance distribution company, T/O&E 9-337, distributes, by driveaway or haulaway, ordnance tracked and wheeled vehicles, artillery, and trailers, for which rail or water facilities are not feasible. It operates within the communications zone and from the communications zone to combat zone parks and evacuates unserviceable ordnance matériel on return trips.

b. Assignment. Assigned to the communications zone on the basis of one company per each 62 wheeled vehicles and 34 tracked vehicles to be distributed per day in an area with a maximum 75 mile radius.

c. Capabilities. Capable of performing its mission within a radius of 75 miles under normal road conditions. Additional companies must be added as distance to be traveled is lengthened or when operating under adverse road conditions. Normally, the company can distribute 62 wheeled vehicles with towed trailers, and transport 34 tracked vehicles per day within a 75 mile radius. If distance to be traveled is decreased, the amount of vehicles which can be delivered will increase.

d. Organization. The ordnance distribution company consists of a company headquarters, a distribution platoon, and two transporter platoons.

e. Operations. The company operates within the communications zone and from the communications zone to combat zone parks. On return trips it evacuates unserviceable ordnance matériel to collecting points or maintenance installations. Transporter operators are used to augment wheel vehicle drivers when the distribution requirement for wheel vehicles exceeds that of track vehicles. Movement of towed artillery handled by the company should be accomplished inso-

far as possible by the appropriate prime mover. Boxed or crated artillery may be moved on transporters or in the cargo space of trailers and trucks moving forward.

174. ORDNANCE COLLECTING POINT COMPANY (T/O&E 9-358)

a. Mission. The ordnance collecting point company, T/O&E 9-358, operates a collecting point for unserviceable ordnance matériel. It receives, records, segregates, inspects, classifies, stores, reclaims and, depending upon state of serviceability, disposes of such matériel to maintenance or scrap facilities.

b. Assignment. Assigned to the communications zone on the basis of one company per 400,000 troops or major fraction thereof in the theater.

c. Capabilities. Capable of operating a collecting point for the receipt, inspection, classification, and segregation of ordnance matériel in support of 400,000 troops in the theater.

d. Organization. The ordnance collecting point company consists of a company headquarters, a storage platoon, and a reclamation platoon.

e. Operations. This company establishes or takes over and operates collecting points for unclassified and unserviceable ordnance matériel, except ammunition, within the communications zone. It receives, records, segregates, inspects, classifies, stores, reclaims, and disposes of ordnance returned matériel. The company will normally establish collecting points on or near main supply routes within the communications zone based on consideration of troop density, transportation means, and storage facilities. As the army rear boundary moves forward, this company may be required to take over and operate or consolidate collecting points previously established by army troops. Records and reports are submitted as required by higher headquarters and are the basis for disposition instructions.

Section II. COMMUNICATIONS ZONE COLLECTING POINTS

175. GENERAL

The establishment and control of collecting points in the communications zone is a maintenance responsibility. Normally, the collecting point will operate under the supervision of a maintenance and supply battalion.

176. COLLECTING POINT OFFICE

The collecting point office is charged with the supervision of all collecting point activities, the submission of reports, and the keeping of all records.

177. OPERATIONS

The collecting point company is the receiving unit in the communications zone for unserviceable or unclassified ordnance matériel (except ammunition) received from maintenance installations or other collecting points. Evacuation and delivery of matériel to the collecting point is performed by other units. Storage facilities must include a large area with all sections accessible by adequate roads and with sufficient hardstanding area for use in disassembly operations. The location and arrangement of the collecting point should be such that items will be received at a minimum number of entrances. This is an important control measure as outlined in *b* and *c* below. When the army rear boundary moves forward, communications zone collecting points may be required to take over and operate or to consolidate collecting points previously established by army troops.

a. Receipt. Matériel received by the collecting point has normally passed through maintenance channels or is overflow from collecting points in the combat zone and is, therefore, normally unserviceable. Under unusual circumstances, as for example, when an organization is disbanded or re-equipped, units may be ordered to turn in ordnance equipment and supplies directly to collecting points to avoid overloading maintenance installations.

b. Segregation, Inspection, and Classification. Preliminary segregation as to identity is accomplished upon receipt by directing matériel from entrances to appropriate subareas. Inspection of the items to determine classification as to serviceability should be accomplished at the entrance to obviate rehandling. Shipments received from maintenance units should be tagged showing identity, but shipments received by the collecting point which have not been identified and cannot be readily identified and segregated at entrances, must be routed to the appropriate area according to the nature of the matériel included in the shipment, as determined by visual inspection, and there be further identified and segregated. For example, a mixed-lot shipment, determined by visual inspection to contain a preponderance of engine assemblies, may be routed either to a designated segregation area or to the engine storage area for further identification and segregation. The classification and identification of matériel is concurrent with inspection. Inspection is limited to the extent necessary to determine the true identity and general state of serviceability. The classification of the matériel will be established at the time of inspection and each group handled as follows:

- (1) Serviceable groups A and B will be processed and returned to supply channels as directed.
- (2) Unserviceable group C will be processed for storage, stored,

and disposed of as directed to depot maintenance installations.

- (3) Unserviceable group D supplies, which are unserviceable and not economically repairable but have recoverable parts, will be processed and disposed of as outlined in *e* below. Supplies having no recoverable parts or components will be disposed of as scrap.

c. Records and Reports. Records of items and their classification must be accurately maintained by the collecting point in order that reports required by higher headquarters may be submitted. The summary of collecting point activities (fig. 5), with minor changes in column headings to adapt it to communications zone collecting points, is the basis for preparation of disposition instructions issued by higher headquarters.

d. Storage. Storage of matériel in the collecting point should be in an orderly manner with careful consideration given to segregation and storage of matériel by types. Storage of all items should be directed toward the end that further deterioration will not occur while awaiting disposition.

e. Reclamation. Only those items which by visual inspection are obviously uneconomically repairable will be referred to the reclamation platoon for disassembly. Normally, the extent of disassembly of major items will be as follows:

- (1) Major items in SNL groups A through E and machine tool items of J group will be disassembled for the recovery of serviceable components only when inspection shows them not capable of being rebuilt as a major item. Items in these groups which are capable of being rebuilt as a major item will be stripped of nonrepairable components or accessories and prepared for storage as a major item awaiting shipment to depot maintenance installations. However, hydropneumatic recoil mechanisms will not be disassembled but will be shipped to authorized hydropneumatic recoil mechanism rebuild shops.
- (2) Fire control matériel capable of being rebuilt, or having recoverable components, will not be disassembled but will be shipped as received to depot maintenance installations.
- (3) Items in SNL G group which are classified as not economically repairable will be completely disassembled to produce the maximum number of assemblies and accessories for return to supply channels. First priority should be established for recovery of those assemblies and accessories designated as "critical" by appropriate authority. Stripping of these major items will not go beyond removal of major assemblies. Hubs and drums, axle shafts, differentials, etc.,

will not be removed from the axle assembly if the axle can be rebuilt as an assembly; carburetors, generators, etc., will not be removed from an engine if it can be rebuilt as an assembly.

f. Disposition.

- (1) The control of ordnance returned matériel is primarily a responsibility of the ordnance supply officer at each level of command. The supply officer must evaluate reports received from the collecting point in connection with supply and maintenance reports and then issue disposition instructions to the maintenance officer based on current theater demand, supply levels, and maintenance facilities.
- (2) Normally, the disposition of certain serviceable items in critical short supply will be covered by instructions from higher headquarters directing the return of all such items in this category to designated installations as soon as possible. Other serviceable items generated as a result of reclamation activities will be stored awaiting specific instructions from the supply officer at each level of command. The matériel accumulated in quantity by the collecting point subsequently furnishes much of the work load of the depot maintenance installations.

PART FOUR

MANAGEMENT

CHAPTER 11

FIELD MAINTENANCE

Section I. GENERAL

178. FIELD MAINTENANCE UNITS

The organization of field maintenance units varies considerably since each is designed for a specific purpose and work load. In general, however, all include a supply section, a service platoon, one or more automotive repair platoon, and an armament repair platoon. The schematic diagram in figure 6 may be taken as the organization of a typical field maintenance unit to show the functions and relations of the various sections. Whenever the maintenance of any particular type of ordnance equipment is not appropriate to the mission of an ordnance field maintenance unit, the corresponding section is not organized. It should be noted that the ordnance light aircraft maintenance company and the ordnance maintenance company, infantry division, do not follow the schematic diagram in figure 6. In the case of the ordnance light aircraft maintenance company, personnel assigned to the service section and the maintenance platoon are trained in the army aircraft maintenance field. The functions of the service section and the maintenance platoon are not materially different from corresponding elements of other field maintenance units. In the ordnance maintenance company, infantry division, it is necessary to provide platoons capable of working at multiple locations. Repairmen trained in the metal working and automotive maintenance career fields are assigned to two identical platoons, together with repairmen trained in the armament repair field. Other variations exist, however, it is felt that the reader will be able to interpret and adapt the following procedures which are based on the schematic diagram in figure 6 to the particular type of unit with which he is concerned.

179. BATTALION AND GROUP HEADQUARTERS

Ordnance battalion and group headquarters are command units provided to command several attached ordnance companies and to direct the tactical and technical operation of the attached ordnance companies. The personnel of the battalion and group headquarters

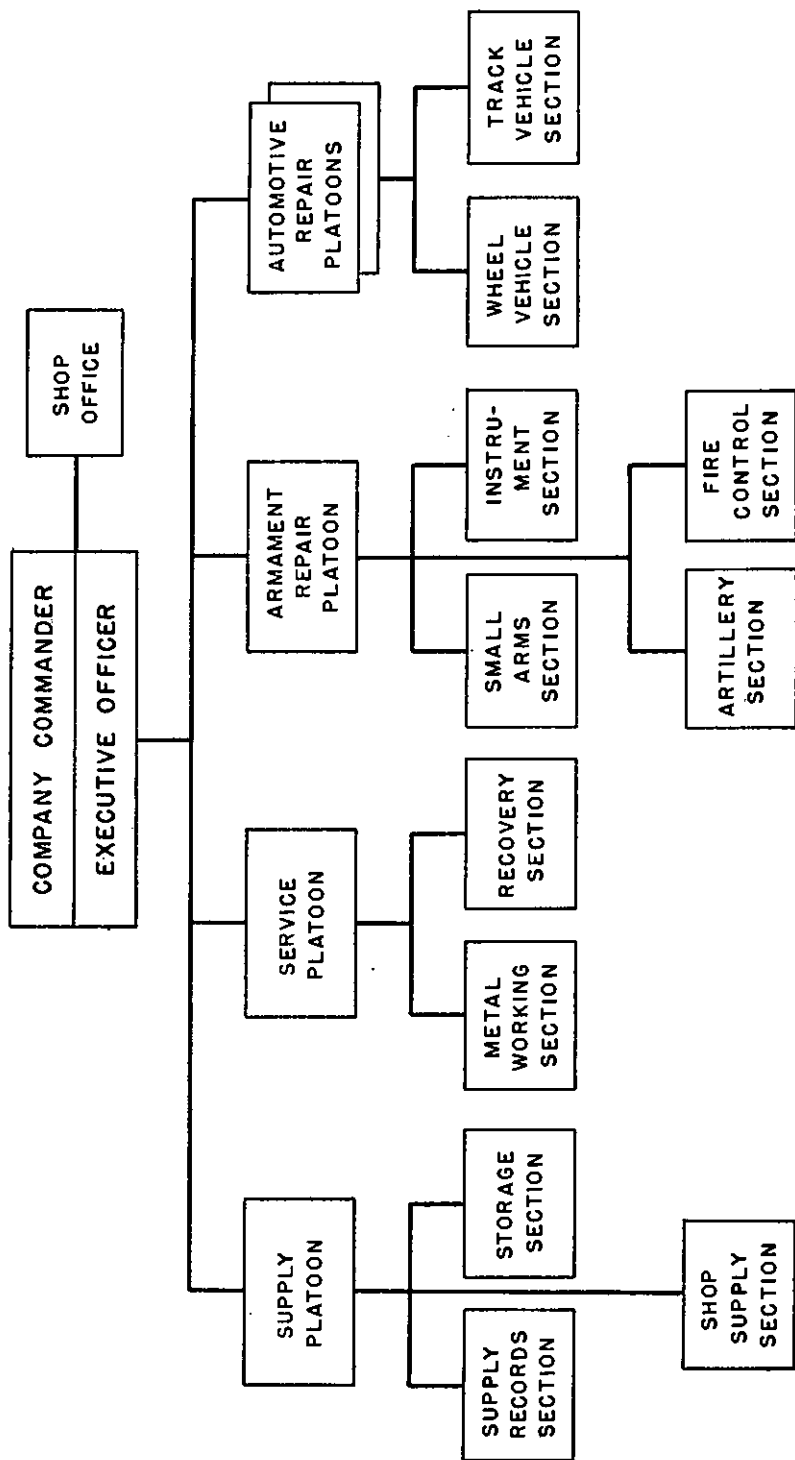


Figure 6. Schematic organization of an ordnance field maintenance unit.

are inspector-instructors whose full time should be devoted to planning, supervising, and improving the operations of the attached separate companies. The companies should operate and the battalion and group headquarters should plan, control, and supervise. The proper concept of the battalion and group staff is that of a management and inspection office reporting directly to the battalion or group commander in his capacity as general manager. According to this concept, the functions of battalion and group headquarters include—

a. Preparation of plans for each operation and submission of an order to implement each approved plan.

b. Evaluation of the effectiveness of operating procedures, the progress of operations, and the submission of recommendations for work improvement.

c. Preparation of periodic and special reports for transmission to higher headquarters.

d. Supervision and inspection of operations and advice, assistance, and instructions to company commanders in operational matters.

e. Issuing orders and directives on operational matters in the name of the battalion or group commander within the limits prescribed by the commander.

f. Preparation of an ordnance information bulletin for circulation to attached ordnance units to insure dissemination of technical information, information on improved working methods, and to record progress in accomplishing assigned ordnance maintenance and supply missions.

180. LOCATION OF THE FIELD MAINTENANCE SHOP

a. *Allotment of area.* The location of the field shop of a maintenance unit in an ordnance battalion is usually determined by the battalion commander either personally or through his staff. When an area is allotted to the unit commander, it becomes his task to dispose his unit in the area to the best advantage.

b. *Use of towns.* The unit customarily bivouacs and sets up shop in the field, utilizing the terrain to proper advantage. In instances where shop facilities and space are available in towns or villages, such facilities should be utilized to the maximum extent possible. Such use should be made only after consideration of such factors as traffic congestion, parking space, cover for vehicles, proximity to establishments or transportation facilities likely to be bombed or shelled, and the rapidity with which the situation is changing.

c. *Service to troops.* The shop must be capable of providing the maximum service with the least inconvenience to the troops it is serving. This involves consideration of the disposition of the troops being supported, the road net available for the use of the various

troop units in approaching the field shop, and the distance from the supported troops which is considered best for the tactical situation at the time. This distance should be such that the shop will be out of light artillery range, but close enough to the troops to permit frequent contact and easy towing of heavy equipment to the field shop. Minor displacements of the combat troops should not necessitate the displacement of the field shop.

181. ACTION ON RECEIVING AN ASSIGNMENT OF A FIELD SHOP AREA

a. Reconnaissance. Immediately upon the receipt of an assignment of a field shop area, the company commander should proceed with his principal commissioned assistants and section foremen to the area for a reconnaissance. This reconnaissance is made for the purpose of determining the most satisfactory layout for the shop, consistent with the facilities or terrain available.

b. Advance party. Whenever possible, an advance party should be used in addition to the reconnaissance party. This party should have the mission of actually staking out the detailed layout of the shop sections within the area.

182. FACTORS GOVERNING A GOOD FIELD SHOP LAYOUT

The following factors must all be considered in planning a shop layout. It will seldom happen that all of the requirements listed will be satisfied completely.

a. Open fields must be avoided and should not be crossed when approaching the shop area. Vehicular tracks on bare, cultivated, or grassy ground will show up from the air and indicate that the area is occupied.

b. Wooded areas with hard standings and existing roads leading into them are fine for field shops.

c. Wooded areas on sloping ground with existing roads leading into them are quite good. Drainage is usually satisfactory and the chance of securing hard standing is usually better than on level tracts.

d. The shop should be near the main supply roads but not on them, with an existing road leading into the field shop area and a complete turn-around that will lead traffic to an established road.

e. In almost any field shop arrangement, it is necessary that vehicles be dispersed at intervals of not less than fifty feet to insure security from aerial attack and artillery fire.

f. In the fall and winter when trees are shedding their leaves, camouflage is particularly difficult, and greater dispersion of vehicles

becomes more essential. This principle also applies to field shops established in the open where no cover is available.

g. Vehicles must not be arranged in a plan that is liable to yield a pattern to aerial observers. The principal axis of each vehicle should be alined at an odd angle to that of adjacent vehicles.

h. The dispersion of vehicles is not conducive to the most efficient accomplishment of the functions of the company, and there will be a tendency to slight necessary precautions for greater convenience. It is essential that dispersion and camouflage be observed at all times.

i. In addition to the above factors of dispersion and ability to perform mission, defensibility of the site against ground attack must be considered (see par. 184).

183. LAYOUT OF THE FIELD MAINTENANCE SHOP

a. The unit headquarters, including the administrative, the unit supply, and the food service sections, should be located near the shop area but away from the flow of traffic into and within the shops. The organizational maintenance section may be located in the same general area or with the automotive maintenance section.

b. The shop office should be located near the route leading to the shops to facilitate receiving work and work requests.

c. The supply section should be located centrally if possible, but if a central location is not feasible, then the area selected for the supply section should be convenient to the automotive repair sections because of the volume and bulk of the parts that must be issued to those sections.

d. The metal working section should be located between the automotive repair shops and the armament repair shop in order that the metal working section may work for either. The recovery section may be actually located with the automotive repair shops if the area permits, since most of its work is done for these shops.

e. The armament repair shop may have its sections located separately since the working conditions of the sections differ widely. The small arms section and the instrument section require an area that is dirt free and sheltered from the weather. The area for each of these sections need not be large, nor is it necessary that they be located on a road, since the type of material handled can be easily carried. The fire control section and the artillery section require protection from the weather and some shelter as well as access to roads. The artillery section should be located conveniently to the track vehicle section of the automotive repair shops to facilitate work on weapons.

184. DEFENSE OF THE FIELD MAINTENANCE SHOP

The layout of the field maintenance shop should provide for defense against enemy raids and for protection against guerillas or partisans. Provisions should be made to have slit trenches dug close to the working areas. Each section should constitute a defended area and should be placed so as to assist adjacent sections by supporting fire. Weapons on hand for maintenance exchange are normally not considered in the unit defense plans, since no plans should be made utilizing them that would prevent their use as replacements for un-serviceable items. However, combat vehicles undergoing repairs in shops should be situated so that their armament can be employed in emergencies. The principal weapon of an attacking force against an ordnance field maintenance shop will be fire and explosive, and all defense plans should provide for an armed firefighting crew to limit the effects of fire.

185. DESTRUCTION OF MATERIEL

If it appears that the field maintenance company may be over-run, the battalion commander may issue orders for it to evacuate to an alternate location. In the event evacuation cannot be accomplished or completed and when the area can no longer be defended, ordnance equipment undergoing repairs and ordnance shop equipment will be destroyed. Destruction will not be initiated except on order of the battalion or the company commander. Personnel must be firmly impressed with the will to defend their installation to the last resource. However, plans for the destruction of the field maintenance shops will be prepared and rehearsed for possible future use. Instructions for the demilitarization of matériel are contained in technical manuals of the 9-200 to 9-999 series. Priority for destruction of matériel will be as follows:

- a. Demilitarization of serviceable and repairable combat equipment.
- b. Destruction of special repair tools.
- c. Destruction of supply records and destruction or disarrangement of critical parts.

186. CAMOUFLAGE

a. *Necessity for camouflage.* The continued existence of field maintenance shops will depend to a great extent on the quality of camouflage. The need for camouflage will be greatest in barren country and least in wooded and hilly country. All personnel should be carefully instructed in the provisions of FM 5-20. Every company should secure and use camouflage nets. When such nets are carefully

erected, they are of great assistance in providing cover for elements of the company.

b. Camouflage discipline. Care must be exercised to maintain camouflage discipline both within and adjacent to the field maintenance shop area. Troops must not be allowed to park equipment in exposed positions near the field maintenance shop or to make new trails and tracks into the shop area. Individual attention to camouflage discipline must be rigidly enforced. Special attention should be given to the maintenance of proper measures at night, especially in the combat zone, in order to safeguard against revealing the position on aerial photos.

187. AIR, CHEMICAL, AND RADIOLOGICAL DEFENSE

a. Air and chemical warning systems will be established whenever the field maintenance shop is located in an area where the capabilities of the enemy include air and chemical attack. Normally, the same sentries can provide warning for either type of attack and can also be a part of the fire guard and internal security guard. Appropriate warning signals will be improvised and instructions given for their use.

b. The unit gas officer and noncommissioned officers will be trained in the effects of radiation on ordnance equipment and in defense measures against radiological warfare. All equipment received in the ordnance field maintenance shops after the enemy has resorted to chemical or radiological warfare will be inspected for contamination. Appropriate measures will be initiated in accordance with instructions published by the Chemical Corps to segregate and decontaminate equipment found to be contaminated. Unit gas personnel will maintain liaison with Chemical Corps units in the area to obtain such advice and assistance as may be required.

188. INTERNAL SECURITY

It is the unit commander's responsibility to establish internal security measures within the unit area. Such measures will include use of perimeter guards and internal guards to frequently check all areas, shops, warehouses, etc. The unit commander will fully utilize all features of terrain or construction to augment security measures.

189. SANITATION AND HYGIENE

a. The health and efficiency of the ordnance unit is dependent upon proper sanitary measures. Because of the dispersion of a field maintenance shop, irregular working hours, and the grease and oil incident to ordnance maintenance, sanitation and personal hygiene are im-

portant and difficult matters. Adequate standards are essential to the continued working efficiency of the ordnance company and can be achieved only if battalion and company commanders provide proper facilities and require personnel to use them.

b. The mechanical skill and ingenuity of individuals often permits the construction of bath, laundry, and other sanitary facilities and should be encouraged whenever possible.

c. Personal injury is a common hazard of maintenance work in the field. The safety program is discussed in chapter 2, section III. Small cuts and wounds are very likely to become infected in the field unless supervisors require each individual suffering an injury, no matter how insignificant, to report for first aid.

d. Instructions covering the matter of military sanitation and first aid are given in FM 21-10 and should be used as a guide in these matters.

190. QUARTERING TROOPS

Troops may bivouac in a central location near the company headquarters or in the vicinity of their working sections depending on the circumstances. Billets may be utilized if suitable sanitary buildings are available. It is preferable to billet by sections to facilitate control and discipline. When troops are in bivouac, care must be taken to prescribe and to outline sleeping areas, and to require individuals to observe such restrictions. If individuals are permitted to sleep on the ground wherever they choose, injuries and deaths may result from moving vehicles and equipment.

Section II. POLICIES

191. OPERATING PROCEDURES

The ordnance work sheet maintained by each shop supervisor and section foreman is the basis for the development of standing operating procedures published by each field maintenance company. Standing operating procedures are maintained as a reference for use by supervisors, especially those newly promoted to supervisory position, as well as for the orientation of newly assigned personnel. Every routine procedure adopted by the sections and shops or by the company should be made a matter of record as soon as it has been established as an accepted method. The delineation of responsibility between shop sections, the format of shop reports, and the handling of intra-shop work orders and supply requests are suitable subjects for incorporation in standing operating procedures.

192. PROPERTY RESPONSIBILITY

a. *Command responsibility.* Ordnance company, battalion, and group commanders have command responsibility for all public property entrusted to their organization, and are charged with insuring that all public property is properly safeguarded, administered, and accounted for.

b. *Direct responsibility.* Individuals to whom public property is assigned or issued have direct responsibility for the care and safe-keeping of such property. Direct responsibility may be further described as supervisory or personal.

(1) Supervisory responsibility is the obligation of supervisors and foremen for public property entrusted to personnel under their supervision.

(2) Personal responsibility is the obligation of individuals for public property specifically entrusted to their care or provided for their use.

c. *Pecuniary liability.* Property responsibility follows the chain of command and any or all individuals in the chain of command may be held financially responsible for loss or damage.

d. *Provision for safeguarding property.* Each individual having personal responsibility for public property will take suitable precautions to safeguard such property. Measures to safeguard property may include use of locks, safes, guarded rooms or areas, transfer of critical items under guard, etc. Many items, such as weapons, watches, binoculars, and automotive spare parts are of considerable money value, and it is a part of command responsibility to wisely select the individuals to exercise supervisory and personal responsibility over such supplies. Items which are extremely fragile, sensitive, valuable, or subject to pilferage and certain kinds of automotive spare parts should be kept in strong rooms in garrison and in locked bins in the field, accessible only to individuals selected for their personal integrity.

193. WORK SUPERVISION

a. Each individual repairman should be made responsible to a single supervisor and receive his instructions from that source. Responsibility for the performance of assigned duties should be placed squarely on the shoulders of the individual repairman. He should not be cramped by petty supervision, but should be expected and required to solve his own problems in a satisfactory manner.

b. Each supervisor will be required to plan the work of his section or platoon. As a job is completed, the supervisor should have another job ready, together with the parts required to complete it.

c. Each supervisor will be held responsible for the quantity and

quality of work done by his section or platoon. Inspectors will report rejected work to the shop office. Rejection memoranda will include the name of the responsible supervisor and the repairman employed on the job. Work passed by inspectors, but rejected by the using organization will be reported by the shop office to the unit commander.

194. ADMINISTRATIVE

a. All personnel having business with the field maintenance shop will report to the shop office. Shop personnel will direct all persons to the shop office. The shop office will assist any individual having business with a section leader in locating the proper individual.

b. Unauthorized personnel not having business in the shop area will not be permitted to enter. Vehicle crews remaining with vehicles may be required to assist in the work on their equipment.

c. The field maintenance shop area will be kept clean and well-policed. Cans or deep pits will be provided for all scrap and shop refuse. Precautions will be taken to empty cans daily and to burn out pits when this can be done safely. Scrap metal will be segregated and metal having salvage value will be conserved for further use or for turnover to the quartermaster salvage yard.

d. Fire extinguishers will be displayed prominently in buildings and in the field. Fire stations should be located conveniently to each section and should contain a fire alarm, fire extinguishers, sand buckets or water barrels, shovel axe, and salvage blankets for beating out fires.

e. Machines, tools, brushes, paint guns, hoses, filters, and any other equipment requiring service and care after use will be well cleaned and stored at the end of each day's work.

f. Qualified personnel will be required to make periodic inspections of fire and safety conditions and to submit reports on conditions found. At the time of these inspections, one noncommissioned officer will be designated as millwright and required to inspect all technical equipment used by the various sections and platoons to insure that preventative maintenance services and organizational maintenance procedures are observed in the case of generators, welding equipment, machine tools, etc.

Section III. COMPANY SHOP OFFICE

195. FUNCTIONS

The company shop office is the administrative group for the technical service mission of the ordnance field maintenance shop. It consists of the shop office clerk and such assistants as the company commander may assign to duty with that office. Functions of the company shop office are—

- a. Preparation and filing of job orders and allied papers.
- b. Routing of job orders in accordance with priorities established by the company commander.
- c. Preparation of reports and graphical records to reflect progress of the technical service mission as required by the company commander and by higher headquarters.

196. ESTABLISHMENT

The company shop office is established near the principal entry into the company shop area whenever the company is engaged in a technical service mission. Shelter is required and may consist of space in local buildings, a tent, or any other form of shelter than can be improvised. An adjacent parking lot with hardstanding is desirable.

197. EQUIPMENT

a. Typewriters, filing cabinets, tables or desks, and a telephone connecting to each section of the company shop area and to the company headquarters are essential to the successful operation of the company shop office.

b. A tub-file, consisting of four sections of sufficient size to accommodate an appropriate number of job order envelope files, should be constructed locally. The tub-file should be made of light-weather-proof material, and should be sufficiently rigid to withstand transporting from one location to another. The four sections are titled as follows:

- (1) Awaiting entry into shops. This section is further subdivided into five compartments.
- (2) Work suspended for lack of essential parts.
- (3) Work in progress. This section is also subdivided into five compartments.
- (4) Work completed.

c. Sections 1 and 3 are subdivided into five compartments. Each day that a job order remains in the status pertaining to sections 1 or 3, the job order envelope file will be advanced one compartment. On the sixth day, it will be marked with a distinguishing mark and will be returned to the first compartment. On succeeding days, it will be again advanced through the compartments. The company commander should require the shop office clerk to advise him when the job order envelope file has remained in sections 1 or 3 of the tub-file for a greater number of days than the standing operating procedures of the company allows.

[illegible]

Figure 7. Job order register.

PROCEDURES

a. *Matériel to be repaired and returned to an organization.* The organization will prepare four (4) copies of the work request section of Work Request and Job Order (WD AGO Form 811). The fourth copy of this form contains the work request portion only and is used as a hand receipt. The organization representative will present the matériel and all copies of WD AGO Form 811 to the company shop office. Local preference may indicate the use of Work Request (WD AGO Form 9-76), or circumstances may preclude the use of any form other than a verbal request. In such cases, the shop office clerk will prepare the work request and job order in four (4) copies. No request for ordnance field maintenance will be denied on the basis of an improperly prepared work request.

b. *Matériel to be repaired and returned to stock.* The responsible ordnance supply officer will prepare four (4) copies of WD AGO Form 811, and will present the materiel and four (4) copies of WD AGO Form 811 to the unit shop office. A separate WD AGO Form 811 is required for each vehicle or artillery piece. A number of like automotive assemblies, small arms or instruments may be placed on a single WD AGO Form 811. The shop office clerk will —

- (1) Sign and return the number 4 copy of WD AGO Form 811 as a receipt.
- (2) Enter the work request on the job order register, and assign a job order number. A suggested format for this register is shown in figure 7. Separate job order registers are maintained for the automotive repair shops, the armament repair shops, and the service shop.

c. *Vehicles.* In the case of vehicles, the shop office clerk will—

- (1) Notify the supervisor of the automotive repair shops to send an automotive inspector to accomplish the Technical Inspection Work Sheet (WD AGO Form 461, 462, or 463).
- (2) Assisted by the automotive inspector, prepare the job order section of WD AGO Form 811 to indicate all work required to be accomplished.
- (3) Pass the number 2 copy of WD AGO Form 811 to the shop supply unit of the supply section to obtain the parts needed to accomplish the work indicated on the job order.
- (4) Upon return of the number 2 copy of WD AGO Form 811, together with a copy of the Parts Requisition (WD AGO Form 9-79), indicating that parts are available, place the number 2 copy of WD AGO Form 811 together with both copies of the technical inspection work sheet and one copy of the parts requisition in a grease-proof canvas or plastic envelope, and send this to the supervisor of the automotive

repair shops. The grease-proof or plastic envelope fabricated locally.

- (5) Prepare the Job Order File (envelope) (WD AGO Form 9-80), or other suitable envelope, place therein the number 1 and 3 copies of WD AGO Form 811, and place the job order envelope file in section 1 of the tub-files.
- (6) Advance the job order envelope file one compartment each day until notified by the supervisor of the automotive repair shops that work has started on the vehicle, then the job order envelope file will be placed in section 3 of the tub-files.
- (7) Advance the job order envelope file one compartment each day until notified by the supervisor of the automotive repair shops that the vehicle has passed final inspection, then the job order envelope file will be placed in section 4 of the tub-files.
- (8) Upon receipt of the grease-proof envelope, notify the organization or responsible supply officer that the vehicle is ready to be picked up, remove the papers from the grease-proof envelope, and place them in the job order envelope file.
- (9) Upon presentation of the number 4 (hand receipt) copy of Form 811, surrender the vehicle, together with the number 1 copy of Form 811 and the number 1 copy of the technical inspection work sheet, to the organization or responsible supply officer requesting the work.
- (10) Place the number 3 copy of the Form 811 in the organization's record of services, enter the data in man-hours expended, the job description, disposition of the job order, and the date of completion on the job order register. Place the number 4 copy of the Form 811 in the job order envelope file and transfer the completed job order envelope file and its contents from section 4 of the tub-files to the job order dead files.

d. Matériel other than vehicles. In case of matériel other than vehicles, the shop office clerk will notify the appropriate shop supervisor to pick up the matériel and will place the envelope file in section 1 of the tub-files. When the matériel is picked up, the job order envelope file will be placed in section 3 of the tub-files. With the exceptions stated above, the company shop office procedures are the same for matériel other than vehicles as for vehicles.

199. LACK OF ESSENTIAL PARTS

When work in progress must be suspended, or when work cannot be started because of the lack of an essential part, the shop office clerk will place the job order envelope file in section 2 of the tub-files and notify the company commander.

200. ADMINISTRATION

a. Files. The company shop office will maintain the file of active job orders in the tub-files as described above. Completed job orders will be retained in a dead file for one year and then will be destroyed. In combat, completed job orders may be destroyed after 90 days.

b. Register. The job order register is maintained by the unit shop office using the form shown as figure 7. A separate register is maintained for each principal repair shop.

c. Reports.

- (1) The shop office clerk should be directed to make a daily report to the company commander of job orders remaining in sections 1 and 3 of the tub-files for a period longer than that allowed by standing operating procedures.
- (2) Any job order suspended because of the lack of essential parts is reported to the company commander without delay.
- (3) The daily summary of operations is prepared by the shop office for submission to higher headquarters. This report is described in section VIII.
- (4) The group labor record is consolidated by the company shop office for submission to higher headquarters. This report is described in section X.

d. Records.

- (1) The company shop office maintains the graphical record of operations. This record is described in section VIII.
- (2) The company shop office maintains the organization record of service for each supported organization. This record is described in section VIII.

Section IV. SUPPLY SECTION

201. FUNCTIONS

a. The supply section of an ordnance field maintenance unit is a small ordnance depot. Many of the operating and administrative procedures of ordnance depots are also applicable to the supply section of the ordnance field maintenance company. Personnel assigned to the supply section should be familiar with the provisions of Chapters 5 and 9 of this manual.

b. The functions of the supply section are—

- (1) Replenishment of the organizational allowances of supported organizations.
- (2) Accomplishing the exchange of unserviceable major items, assemblies, and recoverable parts turned in by organizations.
- (3) Providing the supplies required by the company shops.

- (4) Preparation of the reports of supply operations required by higher headquarters.

c. In order to accomplish these functions, the supply section is divided into three units:

- (1) The supply records unit is the office of the supply officer. The supply records unit keeps the registers and voucher files of the ordnance property record (except for company property, which is kept by the company supply sergeant); current instructions on stock control published by higher headquarters, to include the density list of ordnance equipment held by supported organizations; and prepares all requisitions on ordnance depot companies for the replenishment of ordnance general supplies.
- (2) The shop's supply unit establishes and maintains a service stock of standard hardware and fast-moving parts in each shop section, furnishes parts-expeditors and runners to the repair shops, and expedites the supply of parts required to complete job orders.
- (3) The storage unit keeps the stock cards of the ordnance property record (except for company property); receives, stores, and issues all ordnance supplies; and receives, preserves, and disposes of all unserviceable ordnance supplies turned in by organizations or generated by salvage operations. The storage unit consists of a number of storage sub-units. A storage sub-unit is normally identified with a stores truck and trailer or a van, and includes one or more groups or sub-groups of ordnance general supplies. A storage sub-unit is organized to receive, process, and handle ordnance returned matériel, and another storage sub-unit may be organized to receive and handle artillery and vehicles of the utility stock.

202. ESTABLISHMENT

The supply section may be decentralized to better fulfill its mission and for greater security.

a. The supply records unit requires shelter and may be located in or near the company shop office.

b. The shop supply unit requires an office in or near the company shop office, but parts-expeditors and runners may be attached to the shops where service stocks are maintained.

c. The storage unit may be assembled in one location or individual trucks and vans may be located near the shop sections they normally service.

203. EQUIPMENT

Typewriters, filing cabinets, tables or desks, and telephones are essential to the operations of each unit. Trucks or vans, equipped with parts-cabinets, are included in tables of organization and equipment for the storage unit. Additional racks and dunnage should be constructed or obtained locally.

204. SUPPLY TO ORGANIZATIONS

a. Replenishment of organizational allowances.

- (1) The organization supply officer or his representative will present requisitions for the replenishment of organizational allowances (except where maintenance exchange is involved) on Issue Slips (WD AGO Form 446), prepared in two copies. Circumstances may dictate the use of improvised forms or requisitions may be placed in the form of a verbal request in an emergency, in which case the supply records unit clerk will prepare the issue slips. No demand for supplies will be rejected solely because of the manner in which it is presented, if the essential information is available or can be obtained.
- (2) The supply records unit clerk will—
 - (a) Compare the issue slip with the allowances shown in ORD 7 of the appropriate standard nomenclature list and any other supply authorizations given him by the company supply officer, and amend the "Quantity Requested" column of the issue slip to agree with the authorized allowances, less the quantity on hand or due in, and approve the issue slip for the company supply officer.
 - (b) Register the demand on the voucher register, assign a credit voucher number, advise the organization supply representative of the number assigned, and direct the organization supply representative to the storage unit.
 - (c) The storage unit clerk will accept the numbers 1 and 2 copies of the issue slip and pass them to the appropriate storage sub-unit chief for action.
- (3) The storage sub-unit chief will—
 - (a) Select the items approved for issue.
 - (b) Enter the quantity of each item issued in the "action" column of both copies of the issue slip. Where the quantity issued is less than the quantity approved, write "Due Out" and the quantity not issued in colored pencil in the "action" column of both copies of the issue slip.
 - (c) Post the issues and the quantity due out to the stock record cards, indicating the credit voucher number, or-

ganization and date, and write "Posted," together with his initials on the number 1 copy of the issue slip immediately below the last line item included on the requisition.

- (d) Turn over the items to be issued and both copies of the issue slip to the storage unit clerk.
 - (4) The storage unit clerk will—
 - (a) Require the organization supply representative to sign the number 1 copy of the issue slip in the space provided, as acknowledgment of the issue.
 - (b) Where items are due out, mark the number 2 copy of the issue slip with the word "Credit" in colored pencil, together with his signature and the date in the space provided for the storekeeper.
 - (c) Turn over the supplies to the organization supply representative.
 - (d) Pass the number 1 copy of the issue slip to the supply records unit clerk.
 - (5) The supply records unit clerk will extract the items due out, place the extract in an organizational file, and then will place the number 1 copy of the issue slip in the credit voucher file.
- b. *Exchange.*
- (1) Major items, assemblies, and recoverable parts may be presented directly to the storage unit for replacement upon determination of unserviceability by a qualified technical inspector, whose findings are affixed to the item. In each case, the findings should indicate the reason for unserviceability, such as fair wear and tear, accident, or other cause. In the case of major items, the qualified technical inspector must be a duly appointed inspector of an ordnance field maintenance unit whose appointment is approved by the battalion commander or division ordnance officer. In the case of assemblies and recoverable parts, the signature of the organization motor officer or supply officer will suffice. The findings should be submitted on the following forms:
 - (a) Motor vehicles: on a properly executed technical inspection work sheet.
 - (b) Artillery pieces, recoilless weapons, and mortars: an entry in the gun book (00 Form 5825).
 - (c) Other major items: locally approved inspection form.
 - (d) Assemblies and recoverable parts: exchange tag, tied or fastened to the assembly or part. The nomenclature and number of the assembly or part will be entered on the tag together with a description of the defect.

(2) The storage unit clerk will—

(a) Prepare a folder marked "Exchange" and assign a voucher number corresponding to the date, as for example: EX 8/5/50. Sub-voucher suffixes may be used to number separate transactions, if desired.

(b) Receive the items presented for exchange and pass them to the storage sub-unit chief responsible for ordnance returned matériel.

(c) Prepare two copies of Issue Slip (WD AGO Form 446) to show the quantity of each item presented for exchange in the "Quantity Requested" column; enter the day's exchange voucher number, and pass both copies of the issue slip to the appropriate storage sub-unit chief.

(3) The storage sub-unit chief will take the same action as indicated in paragraph a(3), above. In addition, the storage sub-unit chief will post the quantity of unserviceable items received to the unserviceable property stock cards. The quantity will not be included in the balance of serviceable items, but will be entered separately.

(4) The storage sub-unit chief responsible for ordnance returned matériel will receive the items presented for exchange, segregate them according to type, apply light oil or such other preservatives as may be required, extract the findings of the technical inspectors, and submit a daily report to the company supply officer to show the daily receipts and the cumulative quantities on hand.

(5) The storage unit clerk will—

(a) Take the same action as indicated in paragraphs a(4) (a), (b), and (c), above.

(b) Hold the number 1 copies of exchange issue slips until the close of the day's activities and place all exchange issue slips in the exchange folder.

(6) The supply records unit clerk will place the exchange voucher folder in the voucher file and will enter it in the voucher register.

c. *Dues-out procedures.*

(1) When a demand for replenishment supply or an exchange is not filled, the status will be shown on the stock card, and the organization will have in its possession an issue slip marked "Credit" to show the items due-out. It is extremely important that dues-out be followed-up and cancelled whenever the need for the item terminates due to replacement, repair, or modification of the equipment. Liaison parties and technical inspection teams will verify the status of dues-out when so directed by the company supply officer.

When responsibility for support missions change, the ordnance field maintenance unit commander will include a summary of dues-out in the organization record of service, which is transferred to the new direct support unit. Every effort will be made by the new direct support unit to integrate the dues-out of organizations transferred to their support responsibility without loss of priority. A dues-out for special or unusual types of equipment received after an organization departs should be delivered to them, if at all practicable. A dues-out is never cancelled except by the battalion commander or higher authority, without either the consent of the supported organization or the termination of a support mission.

- (2) Upon receipt of supplies, the storage unit chief will require each storage sub-unit chief to post the quantities received to his stock cards. Where a due-out is recorded, the quantity required will be set aside. Dues-out are filled in order of priority of the date of the original demand.
- (3) Supplies issued against dues-out will be recorded on an issue slip prepared in one copy by the storage sub-unit chief, who will assign a voucher number corresponding to the date and organization, as for example: D.O. 8/5/50—66 Armd Bn, post the transaction, make a notation to that effect on the issue slip, and send the issue slip to the storage unit clerk, who will inform the organization supply representative to present the credit slip and pick up the items. If all items dues-out on the credit slip are issued, the storage unit clerk will write "completed" across the word "Credit" and alter the "Action" column to show the items issued. If a partial issue is made, the storage clerk will write "1st Partial" above the word "Credit" and alter the "Action" column to show the partial issue.
- (4) All dues-out issue slips will be retained in a folder marked "Dues-Out" and bearing a voucher number corresponding to the date, as for example: D.O. 8/5/50. At the close of each day's work, this folder will be sent to the supply records unit clerk who will post the items issued against dues-out and place the due-out voucher folder in the pertinent credit voucher file and enter it in the voucher register.

d. Regulated items.

- (1) When an item is available in quantities less than may be required, the supply officer will direct the storage unit chief to make no exchange or due-out issues, without the specific approval of the supply records unit clerk, and will provide

the supply records unit clerk with detailed instructions for regulating issues to organizations and to company shops.

- (2) Frequently, major items are authorized to be exchanged only on the basis of an allocation or credit established by a division, corps, or army ordnance officer. Under such circumstances, the number of the allocation or credit will be entered on the issue slip by the supply records unit clerk.

205. SUPPLY TO COMPANY SHOPS

a. Shop service stocks.

- (1) The shop supply unit will maintain a service stock in each shop. The service stock will consist of pre-determined quantities of expendable parts and supplies, proven by issue experience to have a daily issue frequency. The service stock will be kept in bins or racks in each shop section for direct issue to the repairmen under the supervision of shop supervisors. The purpose of the service stock is to reduce the number of daily supply transactions, and the delay incident thereto. It is obvious that in mobile ordnance units the service stock should be limited to small expendable parts, standard hardware, and operating supplies. In semimobile ordnance units, the service stock may include assemblies and a wide range of parts.
- (2) The shop supply unit chief and each shop supervisor will review the issue experience of the shop sections and agree on the quantity of each item of supply to be included in the service stock for each shop section. The company supply officer will review the proposed service stock levels for each shop section in order to insure that unreasonable quantities and scarce items are not immobilized and denied for issue to organizations, and obtain the approval of the battalion commander or higher authority of the proposed company service stock list.
- (3) The shop's supply unit chief will—
 - (a) Prepare the company service stock list on Issue Slips (WD AGO Form 446) using the mimeographed or duplicating machine equipment available in battalion or higher headquarters for the purpose.
 - (b) Present the company service stock list to the supply records unit clerk, where it is processed in the same manner as indicated in paragraph 204a, for supply to organizations, except that each item is posted in the block titled "Model (Service) Stock" on WD AGO Form No. 421, and in the space titled "Drawing Number" on WD AGO Form 9-72, which space should be re-titled "Service Stock."

Balances are not reduced by this action and, while the number 1 copy of the company service stock is included in the voucher file, it does not constitute an issue outside the company or consumption by company shops and is not assigned a credit voucher number.

- (c) Upon receipt of the service stock, prepare individual shop service stock lists on issue slips, using mimeographed or duplicating machine equipment for the purpose; distribute the supplies due each shop; and require the shop supervisor to sign one copy as a receipt for inclusion in the company service stock file and to retain one copy.
 - (d) Replenish the shop service stock weekly on the basis of expenditure records and, once each month, take a physical count of the service stock to verify balances. To obtain replenishment, prepare an issue slip in two copies using the mimeograph or duplicator forms of the company service stock list. This demand is processed in exactly the same manner as indicated in paragraph 204a, for supply to organizations. This issue does reflect a consumption by company shops and is, therefore, posted to stock cards as an issue. The number 1 copy of the issue slip is assigned a credit voucher number.
- b. *Job order supply.*
- (1) Upon receipt of the number 2 copy of the work request and job order (WD AGO Form 811) from the company shop office (par. 198(c)(4)), the shop supply unit chief will prepare Parts Requisition (WD AGO Form 9-79) in two copies, each showing the job order number. This demand is processed in the same manner as prescribed in paragraph 204a, for supply to organizations, except that all parts requisition ships will be presented directly to the storage unit clerk who will assign a voucher number corresponding to the date, with the job order basic number as a suffix, as for example: Shops 8/5/50-101. This voucher number will be utilized by the stock records unit as the voucher number for posting to stock cards, thus eliminating the necessity for processing the parts requisitions through the supply records unit to obtain a credit voucher number. All number 1 copies of parts issue slips received by the supply records unit from the storage unit will be placed in a folder marked "Shops," with the date, and the folders, when complete, will be marked to show the spread of job orders, and will be placed in the voucher file and entered in the voucher register.
 - (2) Normally, a backlog of several vehicle jobs will be generated because of space and labor limitations, and the shop supply

unit takes advantage of this to accumulate the parts required to insure the uninterrupted flow of work after the vehicle has been taken into shops. Several boxes or bins marked with job order numbers will be established in or near the automotive repairs shop's office, and the parts obtained for each job order will be placed in these boxes to enable the supervisor of the automotive repair shops to plan his work. Close liaison between the shop's supply unit and the automotive repair shop supervisor is essential to eliminate or reduce awaiting parts time.

- (3) Matériel other than vehicles. Shop supervisors will inspect without delay all matériel brought into their shops to determine the requirements for parts not available in their shop service stock. Demands will be prepared on Parts Requisition (WD AGO Form 9-79) in two copies and presented to the shop supply unit. The shop supply unit will process such demands in the same manner as prescribed in paragraph 204a above, for the replenishment of organizational allowances.

206. REPLENISHMENT OF COMPANY STOCKS

a. At intervals prescribed by the ordnance depot company (army) designated to replenish the supplies consumed by the ordnance field maintenance company, the supply records unit chief will prepare replenishment requisitions. Each storage sub-unit chief will review his stock cards and prepare a list of supplies required to restore stock levels, indicating separately the quantities required to fill outstanding dues-out. The issue slip should be used for these work sheets to insure that the authorized level, dues-in from previous requisitions, and consumption may be properly entered on the replenishment requisition. The supply records unit chief will consult the company supply officer to obtain any special requirements that should be considered.

b. The total requirement should be analyzed by the company supply officer and the various shop supervisors to determine what items can be generated through salvage and reclamation and by the repair of unserviceable matériel currently in shops.

c. The requirement is then typed on Issue Slips (WD AGO Form No. 446) in four copies and the number 1, 2, and 3 copies will be signed by the company supply officer. The number 4 copy is placed in a file marked "Incomplete Requisitions" and three copies are submitted to the supporting ordnance depot company.

d. If the requisition is filled concurrently or within 48 hours, dues-in need not be posted to stock cards. If delay is anticipated,

however, and edited copy of the replenishment requisition is obtained and passed to the storage unit for posting dues-in to stock cards.

e. Upon receipt from the responsible depot company of the action copy of the issue slip together with the supplies issued thereon, the storage unit chief verifies the count; alters the issue slip to conform; requires the storage sub-unit chiefs to post receipts and dues-in to stock cards; marks the requisition "Posted" together with his initials; and passes the action copy of the issue slip to the supply records unit clerk.

f. The supply records unit clerk will compare the action copy of the issue slip with the number 4 copy. If all line items have been received, he will remove and destroy the number 4 copy. If partial action has been accomplished, he will line out those items received in full and will return the number 4 copy to the "Incomplete Requisitions" file. The action copy is placed in the debit voucher file.

207. SPECIAL REQUISITIONS

Every effort is made to avoid the necessity for special requisitions. Since the amount of work required for their processing by the ordnance depot company is approximately the same as for a replenishment requisition, it is obvious that too great a reliance on special requisitions will result in delay in processing replenishment requisitions by the ordnance depot company.

208. INVENTORY

Due to the decentralization of stock cards to storage sub-unit chiefs, inventory is a continuous process and each storage sub-unit chief will be required to accomplish a daily scheduled inventory task. The company supply officer will conduct sufficient spot inventories to insure that stock cards accurately reflect the stocks actually on hand.

209. UNSERVICEABLE PROPERTY

The supply officer is responsible for the disposition of unserviceable matériel. Upon receipt of the recommendations of the technical inspectors, submitted by the storage sub-unit chief responsible for ordnance returned matériel, the company supply officer will determine whether unserviceable items should be reclaimed or evacuated. If reclamation is decided upon, the supply officer will prepare the work request. If evacuation is determined, the company supply officer will request disposition instructions from the battalion supply officer. If items are of no value, they will be turned over to a local quartermaster salvage officer. The receipts obtained for items

evacuated or scrapped will be posted to unserviceable stock cards and placed in the voucher file.

210. LATERAL SUPPLY

Each company supply officer confronted with an essential requirement for small quantities of parts, or for an assembly, should request the battalion supply officer to obtain the items from adjacent ordnance field maintenance companies before resorting to a special requisition (see par. 212).

211. REPAIRED MATERIAL

When unserviceable property has been repaired on a work request initiated by the company supply officer, it will be picked up on the serviceable stock card, and the unserviceable quantity will be reduced by a like quantity. The job order number will be posted to both stock cards as the authority for the dual entry, and the number 4 copy of Form 811 will be filed by the supply records unit as a voucher and will be recorded on the voucher register.

212. PARTS CONSUMED

Periodically, higher headquarters will require the ordnance field maintenance company to submit a report of parts consumed. The company supply officer will require each storage sub-unit chief to prepare three copies of the Consolidation of Parts (WD AGO Form 866) to show the quantity of items issued, dues-out for the period, and the quantity of serviceable items generated by salvage and reclamation operations, or obtained from ordnance advance collecting points. Care will be exercised to avoid duplicate entries in the case of supplies affected by lateral transfer from one ordnance field maintenance company to another. Normally, supplies issued by one ordnance field maintenance unit to another as a lateral transfer will be reported as consumed by the receiving unit and will not be included by the issuing unit. Consumption reports will be arranged according to the sequence of groups in the ordnance catalog, a cover sheet will be prepared by the company supply officer to give any additional information required, and two copies will be forwarded as directed. One copy will be retained by the company supply officer for use in determining issue experience and for the revision of stockage objectives.

a. Ord 8 lists the assemblies, accessories, parts, tools, and supplies authorized to be carried by ordnance field maintenance units. Each ordnance field maintenance unit commander will request a density list of the ordnance equipment he is expected to support. Normally, direct support companies will be authorized to stock parts on the

basis of 80 percent of the ordnance equipment in the hands of supported using units. The balance, or 20 percent, will be evacuated to heavy maintenance companies and these units will plan to accomplish this 20 percent of the third echelon of maintenance work and all of the fourth echelon of maintenance. These factors will be adjusted to suit the circumstances and state of training of individual companies. The ordnance field maintenance unit supply officer will normally compute the basic load on 15 days of supply and on the approved density list of ordnance equipment until experience is gained, and thereafter he will establish a stockage objective (control level) on the following basis:

$$\text{Stockage objective (15 days of supply)} = \frac{\text{Average density for NEXT 90 days}}{\text{Average density for PAST 90 days}} \times \frac{\text{Issues plus dues-out for PAST 90 days}}{6}$$

$$\text{Example: } \frac{150}{125} \times \frac{22 + 3}{6} = 5$$

It may be noted that the number 6 is a constant obtained by dividing the number of days of consumption by the 15 days of supply. If the figure to be used is for 120 days' consumption, the constant would be 8, which is obtained as follows:

$$\frac{120 \text{ days' consumption}}{15 \text{ day's supply level}} = 8$$

b. If order and delivery time exceeds two days, but is less than four days, the company supply officer may add 20 percent. Otherwise, this factor will be disregarded. If order and delivery time exceeds four days, the company supply officer will request instructions from the battalion supply officer because supply is too uncertain to permit proper management methods to be applied. A safety level (reorder point) should be established at a quantity equal to the estimated consumption for a period of days equal to the average order and delivery time or at least 20 percent of the stockage objective (control level).

c. The stockage objective (control level) and the safety level (reorder point) will be shown on the stock card.

213. SALVAGE

Salvage operations constitute a valuable source of supply for the ordnance field maintenance unit. Salvage may be received from a collecting point, generated during normal maintenance operations, or turned in by organizations. In either event, a job order will be

prepared to authorize the removal of serviceable or repairable components. Upon removal, all components will be inspected and classified as to serviceability by a qualified technical inspector, and turned in to the storage unit. Serviceable supply categories "A" and "B" will be placed in stock. Unserviceable supply categories "C" and "D" will be preserved, awaiting disposition instructions from the company supply officer. Repairs are not undertaken unless a need is foreseen and the work is authorized by the company supply officer. No salvaged component is used without due notice to the storage unit, so that appropriate entry can be made on stock cards. Salvaged components will not be permitted to lie around shops, but will be turned in promptly to the storage unit. Within the storage unit, no unidentified, unclassified, or unserviceable assembly or part will be received or held by anyone other than the unserviceable storage sub-unit chief.

214. ADMINISTRATIVE

a. Files. The supply section will maintain all files of correspondence pertaining to supply for the technical service mission of the ordnance field maintenance unit. Normally, files of correspondence will be retained for one calendar year and then will be destroyed at the end of the succeeding calendar year. In combat, files may be retained for six months and destroyed at the end of the succeeding six months period. The voucher files may be subdivided to separate the vouchers pertaining to major items from those pertaining to other supplies. The company supply officer will maintain an ordnance work sheet as prescribed in previous paragraphs of this manual.

b. Voucher registers. Voucher registers may be maintained on any convenient form, but normally need be no more extensive than the index sheet for the voucher file.

c. Organization files. A separate file for each supported organization will be established and will contain extracts of dues-out, unfilled requisitions, and special supply authorizations. When a transfer in support responsibility occurs, the organization dues-out file and any special supply authorizations will be sent to the company shop office for inclusion in the organization record of services. Unfilled requisitions will be presented to the company commander, previously responsible for ordnance support, who will indicate the action to be taken.

d. Reports.

- (1) Status of major and regulated items and maintenance summary. Figure 8, a summary of the status of the major items in the utility stock, both serviceable and unserviceable and in shops for repair and return to organizations, is required to be submitted to battalion headquarters each day. While

(UNIT DESIGNATION)

AS OF _____ HOURS, _____, 19____

[illegible]

Figure 8. Status of major and regulated items and maintenance summary.

this is a combined supply and maintenance summary, the company supply officer has the dominant interest and is responsible for preparation of the summary. The information for columns 6 to 11, inclusive, will be obtained from the company shop office clerk by the company supply officer.

- (2) The group labor record for the supply section is prepared by the supply records unit for submission to the company shop office. This report is described in section X of this chapter.
- (3) The report of parts consumed is prepared by the supply section for submission to higher headquarters.

e. Records.

- (1) The company supply officer should maintain a record of spot inventories made personally or under his supervision.
- (2) The stock record cards of all ordnance general supplies issued for use by company shops and for issue to organizations are maintained by the storage unit.
- (3) A record of the company service stock list and all transactions pertaining to the service stock will be maintained by the shop supply unit.

f. Publications. The supply section will maintain a library of supply information, including Ord 1, 5, 6, 7, 8, 13, and 14 of the Ordnance Catalog; army regulations; special regulations; Department of the Army supply bulletins; and local directives on supply matters. The ordnance field maintenance company is not responsible for the distribution of ordnance publications, but should assist organizations in preparing requisitions for ordnance publications for submission to the publications depot of The Adjutant General's Corps.

Section V. SERVICE SHOP

215. GENERAL

a. The service shop of an ordnance field maintenance unit includes those specialists and special equipment that are pooled to do work common to all repair shops. Any specialist or equipment that is required on a full time basis by the repair shops should be assigned to that repair shop. Normally, the metal workers and tank transporter operators, together with their special equipment, may be operated more efficiently if pooled in the service shop. The same reason applies to specialists, such as canvas and leather repairmen, carpenters, painters, and crane operators, together with their special equipment.

b. The service shop normally consists of a metal working section and a recovery section.

216. METAL WORKING SECTION

a. For administrative reasons, the following units are normally included in the metal working shop:

- (1) The machine shop unit.
- (2) The blacksmith and welding unit.
- (3) The body repair unit.
- (4) The woodworking unit.
- (5) The painting unit.
- (6) The canvas and leather repair unit.
- (7) The battery repair unit.

b. The metal working section accomplishes work requests received on Form 811 by the company shop office and passed to the service shop. Work requests may be initiated by supported organizations, by other repair shops, by the company supply office, by the maintenance or supply officers, or by ordnance battalion headquarters or higher authority.

c. The metal working section accomplishes work required by other repair shops. Work may be transferred to the metal working section on Transfer Memorandum (WD AGO Form 10-155) and be performed in the metal working shop area or the transfer memorandum may be presented to the metal working section leader with the request that the necessary specialists and equipment be dispatched to do the work in the area of the shop initiating the request.

d. Numerous mechanical and electrical devices are designed in the field and satisfy a real need which can only be met by local manufacture. Examples are devices for assisting the treatment of the wounded and injured, modifications to enemy matériel, repairs to equipment of other technical services, labor-saving devices, and brackets for equipment. Work of this nature is placed on Form 811 by the company shop office and is processed in the same manner as other jobs.

e. The metal working section is frequently able to recondition worn parts, to manufacture needed parts, and to modify assemblies and parts. Requirements of this nature are placed on Form 811 and processed in the same manner as other jobs.

f. The metal working section will require a large and varied stock of hardware and metal stock. The section leader should constantly contact ordnance collecting points, quartermaster salvage yards, and the scrap piles of the other shops to pick up anything of potential value. Stocks of welding materials, including industrial gases, are always difficult to maintain and the section leader should conserve his supplies against an emergency. Emergencies occur so frequently in the field that the metal working section leader should reserve a portion of his metal stock and welding supplies for such contingen-

cies, and should be directed by the company commander to deplete this reserve only on approved projects.

g. The metal working section foreman will record the number of man-hours of direct labor expended on each job order by repairmen assigned to his section on each WD AGO Form 811 or WD AGO Form 10-155. This entry will be made whether the work is done in the metal working shop or in other repair shops.

217. RECOVERY SECTION

a. The tank transporters assigned to the ordnance field maintenance units are intended primarily to handle heavy equipment within the shop area. They have a secondary mission of hauling heavy assemblies when the unit displaces, and in the absence of an ordnance recovery company in the area, they may assist combat organizations in battlefield recovery. The operating procedures of the recovery sections are similar to those of the ordnance recovery company.

b. The recovery sections may be given specific jobs or may operate on a call basis. To avoid dissipation of effort, all orders and work requests will be channeled through the service shop supervisor. Individual tank transporters will be dispatched on Driver's Trip Ticket (DD Form 110) initiated by the company dispatcher and countersigned in the "Remarks" section by the service shop supervisor.

218. ADMINISTRATION

a. Files. The service shop supervisor will maintain files of the preventive maintenance services inspection reports made on the shop equipment under his control. These files will be maintained for 90 days and then may be destroyed. An ordnance work sheet will be maintained as prescribed in this manual.

b. Registers. The service shop may maintain a job order register for local use as a record of work done in the shop, but this register will not replace the register maintained by the company shop office.

c. Reports. The group labor record for the service shop is prepared by the service shop supervisor for submission to the company shop office. This report is described in section X.

Section VI. AUTOMOTIVE REPAIR SHOPS

219. GENERAL

a. The repair of automotive vehicles is accomplished by the automotive repair shops. If the ordnance field maintenance unit is responsible for the repair of both wheel and track vehicles, the auto-

motive repair shops should be divided into a wheel section and a track section. If the ordnance field maintenance unit is responsible for the repair of only one category of vehicles, the automotive repair shops may be divided into two or more wheel or track sections.

b. The initial and final inspections, as well as the inspection teams for the inspection and instruction of organizational maintenance personnel are taken from personnel regularly assigned to the automotive repair shops. Contact and working parties also come from personnel normally assigned to the automotive repair shops.

c. Normally, the senior officer assigned to the automotive repair platoons of the ordnance field maintenance unit is the supervisor of the automotive repair shops and the other officers and section leaders of the automotive repair platoons are designated as foremen of shop sections. The supervisor of the automotive repair shops may have an assistant if the magnitude of the operation justifies. The assistant supervisor of the automotive repair shops may supervise normal routine operations, priority work, or some specific phase of operations, for example: the conduct of technical inspections and the contact and working parties.

220. SHOP INSPECTIONS

a. The most important operations in the automotive repair shops are the initial and final inspections of work. The company commander is responsible for both the quality and quantity of work performed by his company and will soon discover that the output of the automotive repair shops is a very important criteria of the overall efficiency of the company.

b. The objective of the automotive repair shops is to repair vehicles and assemblies to a condition of serviceability equal to a reasonable expectancy for service, without a major breakdown, until the next 6,000 mile or semiannual technical inspection. Automotive inspectors will be trained in supply economy and should be encouraged to utilize their experience and training to render decisions which will obtain the utmost life out of components, rather than to unnecessarily condemn and replace all suspected components. Frequently assemblies and parts will appear to have considerable usable life, although positive serviceability for 6,000 miles may be questionable. In such instances, the automotive inspector should make an appropriate notation on the technical inspection work sheet as to his conclusions and continue the component in service, wherever practicable. Such instances of deferred maintenance will be encouraged in the interests of supply economy and the management of the maintenance effort.

c. The volume of work performed will dictate the number of

automotive inspectors required. The automotive inspector or inspectors should be the best repairmen available, since excellent inspection is the surest means available to the company commander for improving the quality of production.

d. The relationship of the company commander, the supervisor of the automotive repair shops, and the automotive inspectors must be one of mutual confidence and cooperation. Too arbitrary an attitude on the part of the automotive inspectors will harrass the automotive repair shop sections, reduce production, and waste supplies. On the other hand, subordination of the automotive inspectors to the automotive repair shops supervisor may prevent a high standard of quality being attained. The automotive inspectors are directly responsible to the company commander for the quality of work performed by the automotive repair shops, and should also bear a fair share of the responsibility for the quantity of production.

221. SHOP LAYOUT

a. Vehicles should be picked up by the initial automotive inspector at or near the company shop office. A stretch of road should be available to permit an adequate road test, and an elevated ramp or hoist should be utilized at the completion of the road test to facilitate the completion of the initial inspection.

b. Upon completion of the initial inspection, the vehicle should be placed on a line or in an area designated as the "Awaiting Entry into Shops Line."

c. Usually, field maintenance shops are organized on a job shop basis; i.e., the vehicle is placed in a bay and all work is performed in that bay by a crew of repairmen. Detachable parts may be removed for work elsewhere, but the vehicle is not moved until the work is completed, and it is ready for final inspection. An exception may be made if painting, body work, or artillery work is required; in which case the vehicle may be moved to the paint shop, body shop, carpenter shop, or artillery shop.

d. The shop service stock and tool crib should be centrally located and convenient to the bays of the shop to reduce the time required to obtain standard hardware and special repair tools. These activities may be operated by personnel furnished by the shop's supply unit to avoid the diversion of skilled repairmen from work for which they have been trained.

e. When the vehicle is completed, it should be removed from the bay promptly and placed on a line or in an area designated as the "Awaiting Final Inspection Line."

f. The shop layout is dependent on the organization, mission, and location of the company. A good shop layout, planned to minimize

the movement of individual repairmen to obtain parts and special repair tools, and to facilitate the flow of work, is an essential feature of training and will do much to insure the efficiency of operations in the field.

222. PROCEDURES

a. The automotive inspector will accomplish the initial inspection as quickly as possible after receiving notification from the shop office clerk.

- (1) In the event of an emergency, for example, a transient vehicle enroute through the area, the automotive inspector will verify the work required and will arrange for needed repairs to be done without delay.
- (2) If the repairs required are minor in nature, and the general condition of the vehicle is good, the automotive inspector will note the work to be performed on the Form 811 and arrange for the work to be done without delay.
- (3) If a technical inspection work sheet has been made on the vehicle within the last ninety days in garrison or thirty days in the field, the automotive inspector will utilize the technical inspection work sheet retained in the company shop office files, making such entries as are necessary to bring this form up-to-date.
- (4) If the condition of the vehicle warrants, and if no technical inspection work sheet is available in the company shop office files within the time limits indicated above, the automotive inspector will prepare two copies of the Technical Inspection Work Sheet (WD AGO Form 461, 462, or 463, as appropriate).

b. The automotive inspector will assist the shop office clerk in listing the work to be performed on WD AGO Form 811 and will mark the number of the job order on the windshield or other forward areas of the vehicle, unless work is to be done immediately. The number is marked in gasoline soluble paint or grease pencil, to enable the automotive repair shop's supervisor to locate it without searching for registration numbers.

c. Preceding sections have shown how one copy of (WD AGO Form 811 is passed to the supply section by the shop office clerk for preparation of the parts requisition and selection of parts. Upon return of the Form 811 and one copy of WD AGO Form 446, the shop office clerk places all papers pertaining to the job order in a grease-proof envelope and sends the envelope to the automotive repair shop supervisor. Upon receipt of the grease-proof envelope, the automotive repair shop supervisor will know that parts are

ready in the shop's supply unit and will plan to bring the vehicle into the shops. When personnel and space are available, the automotive repair shop supervisor will direct the parts runner assigned to the automotive repair shops from the shop supply unit to pick up the parts and will give him the number 1 copy of the Parts Requisition (WD AGO Form 9-79) from the grease-proof envelope as authority to draw parts from the shop supply unit.

d. The repair crew chief designated by the automotive repair shop supervisor or section foreman to do the work will study the technical inspection work sheet and the job order and plan the work to be performed. Repairmen will be assigned to jobs, special repair tools will be drawn, and any components requiring repair in other shops will be detached, unless the entire vehicle is to be moved to the body shop, carpenter shop, or artillery shop. The shop supervisor and section foreman assist repair crew-chiefs in planning work so that all repair work will proceed at an even pace and delays are avoided. If work is required to be performed by another shop, the shop supervisor or section foreman will prepare Transfer Memorandum (WD AGO Form 10-155) in two copies, place the number 1 copy in the grease-proof envelope and send the number 2 copy to the shop requested to do the work.

e. If additional work, not included on the job order and the technical inspection work sheet, is found to be necessary the repair crew-chief will enter it on the job order and the technical inspection work sheet, do the work, and advise the shop supervisor or section foreman at the earliest opportunity.

f. If additional parts are needed, the repair-crew-chief will prepare a parts requisition in three copies and place thereon the job order number, place the number 3 copy in the grease-proof envelope, and pass the number 1 and 2 copies to the parts runner. The parts runner will obtain the parts, leaving the number 1 copy with the storage unit, and giving the number 2 copy to the shop supply unit clerk. If the part is not available, the parts runner will leave the number 1 copy with the storage unit and give the number 2 copy to the shop supervisor who will place it in a suspense file and investigate to determine if work must be suspended, in which case he will notify the shop office clerk.

g. When the job nears completion, the repair crew-chief will notify the shop supervisor or section foreman, who will plan for the next job to be brought into shops.

h. The shop supervisor or section foreman will record the number of man-hours of direct labor expended on each job order by repairmen assigned to the automotive repair shops on the number 2 copy of Form 811, and will insure that man-hours of direct labor ex-

pending by the armament repair and service shops are entered on Form 10-155, where appropriate.

i. The automotive inspector will carefully review both the job order and the technical inspection work sheet and inspect the work performed including a road test where necessary. If the vehicle passes final inspection the automotive inspector will sign both copies of the technical inspection work sheet; indicate the time, date, and place; initial all copies of the job order; and notify the shop office clerk. If the vehicle does not pass final inspection the final automotive inspector will prepare Rejection Memorandum (WD AGO Form 829) in three copies, retain the number 1 copy in a suspense file, return the vehicle with the number 2 copy added to the grease-proof envelope, and pass the number 3 copy to the shop supervisor. When the vehicle is again presented, he will compare it with the number 1 copy to verify the work performed and place the number 1 copy in the grease-proof envelope. The shop supervisor will maintain a file of rejected memorandum as tangible evidence of the efficiency of the individual repairmen, section foreman, and repair crew-chiefs.

223. ADMINISTRATION

a. *Files.* The automotive repair shops maintain no permanent files of correspondence. Temporary files, covering work performed by the automotive repair shops may be maintained at the discretion of the shop supervisor, but the company headquarters is the office of record for all correspondence. The shop supervisor and each section foreman will maintain an ordnance work sheet as required by previous paragraphs.

b. *Registers.* A shop register of job orders may be kept as a record of work in the shop, but will not replace the job order register required to be maintained by the company shop office.

c. *Group labor records.* The group labor record is prepared by the section foreman and submitted through the supervisor of the automotive repair shops. This report is described in section X.

d. *Reports.* The daily report of operations for the automotive repair shops is prepared by the supervisor of the automotive repair shops for submission to the company shop office. This report is described in section VIII.

e. *Publications.* The automotive repair shops will maintain a library of technical information, including ORD 1, 6 and 8 of the Ordnance Catalog, modification work orders, technical bulletins, lubrication orders, and technical manuals on ordnance matériel. This library will be decentralized to the various shop sections, where it will be available to the individual repairmen.

Section VII. ARMAMENT REPAIR SHOPS

224. GENERAL

a. The armament repair shops may include any or all of the following sections, depending on the mission of the ordnance field maintenance unit:

- (1) The Small Arms Repair Section.
- (2) The Artillery Repair Section.
- (3) The Instrument Repair Section.
- (4) The Fire Control Repair Section.

b. Contact and working parties are taken from personnel regularly assigned to the armament repair shops.

c. Normally, the platoon leader of the armament repair platoon is the supervisor of the armament repair shops, and other officers and section leaders are designated as assistant supervisors and as foremen of shop sections. The supervisor of the armament repair shops will normally have one or more assistants because of the variety of work performed by the armament repair shops. The assistants to the supervisor of the armament repair shops should be specialized in one or more classes of ordnance equipment to supplement the experience of the supervisor. Assistant supervisors of the armament repair shops may supervise the normal routine operations of one or more shop sections or some specific phase of operations, for example—the contact and working parties, the conduct of technical inspections, and range service.

225. SHOP INSPECTION

The inspection of matériel in the various sections of the armament repair shops before, during, and after work is accomplished by the section foremen, who are held responsible for both the quality and quantity of production. The supervisor of the armament repair shops and the assistant supervisors will inspect sufficient work to insure that proper standards are maintained, and that parts, time, and effort are not wasted.

226. SHOP LAYOUT

The size and bulk of ordnance equipment and the working conditions required for the accomplishment of good work influence the layout of the armament repair shops. Artillery and fire control matériel are heavy and bulky, and the shop sections for this equipment should be accessible to roads. The instrument repair shops must be located in a dry and dustfree area to obtain good results. While small arms are light and easily carried by hand, they are also received in large quantities and accessibility to roads is a consideration in the location of the small arms section.

227. SMALL ARMS SECTION

a. Direct support companies.

- (1) In direct support ordnance companies, a large proportion of the repair work is performed outside the company shops area.
- (2) During training, the small arms repairmen and the small arms repair truck should be on the range to assist organization armorers in the repair of weapons, and to insure that all weapons are functioning. If several ranges are in use, the small arms repair section may be broken down into several working parties conveniently located to accomplish repairs. If communications are available, working parties may operate on a call basis. If communications are not adequate, contact parties should contact each range on a schedule.
- (3) Before range practice, the weapons of an organization should be given a technical inspection by a working party to insure proper and safe operating conditions. Particular attention will be given to the condition and status of organizational spare parts, as organizations may neglect their organizational allowances and permit them to become depleted when weapons are not in daily use.
- (4) All small arms repairmen are required to be familiar with safety regulations covering the use of weapons as prescribed in field manuals, and in TM 9-1900. If requested by the responsible organization commander, advice should be given; however, the organization commander is solely responsible for the conduct of range practice and his responsibility for safety is not reduced by the presence of ordnance personnel on the range. Flagrant violations of safety regulations, which might result in injury, should be reported to the officer in charge of firing and, at the earliest opportunity, to the ordnance company commander who will invite the attention of the responsible organization commander to the pertinent regulation through appropriate channels.
- (5) During combat, the small arms section continues to provide working parties as opportunity permits, and to repair small arms turned in by organizations received from collecting points or received from the battlefield. All weapons received by direct support companies, both United States property and captured enemy matériel, will be treated to arrest deterioration without delay.

b. Heavy Maintenance Companies.

- (1) During training, the small arms sections of heavy mainte-

nance companies may assist the range service provided by direct support companies.

- (2) During combat, the small arms sections of heavy maintenance companies support ordnance collecting points, and normally handle a large volume of United States and captured enemy weapons. All weapons received are treated to arrest deterioration without delay. Priority for the repair of small arms is determined by the company supply officer who will also arrange for the disposition of excess weapons.

228. ARTILLERY SECTION

a. Direct Support Units.

- (1) Because of the emphasis placed on maintaining the artillery in the hands of troops in serviceable condition, a large proportion of artillery maintenance is performed at the battery position. When repairs cannot be accomplished promptly by replacement of parts, the artillery piece should be replaced at the battery position.
- (2) During training, the artillery section should furnish contact parties on the range to assist organizational battery mechanics.
- (3) Before service practice, all artillery pieces should be given a technical inspection by a working party to insure proper and safe operating condition.
- (4) During service practice and in combat, artillery units are visited by contact parties at frequent intervals. If work is required, a working party is called. If replacement is necessary, the piece is exchanged at the battery position. Any artillery piece, which is out of action because of the lack of a part or the lack of maintenance will be reported by the contact party to the company commander. If corrective action is beyond the capabilities of the ordnance field maintenance unit, the company commander will report the circumstances to the battalion commander or to higher headquarters. Reports of nonfunctioning artillery pieces will be transmitted to the army ordnance officer, if no intervening ordnance battalion or group can provide the corrective action or make replacement.
- (5) Gun tube life must be verified and made a matter of record in order that replacement gun tubes will be available when required and to provide a sound basis for rationing when issue must be regulated. Reduced to fundamentals, the need for replacement of gun tubes and many other components, such as recoil mechanisms and breech parts in-

creases with the number of rounds fired and with increased rates of fire of the weapon. The phenomena of erosion of gun tubes during prolonged firing is a subject that is learned in the field. Both the using organization and ordnance personnel will experience a tendency to become alarmed over the appearance of gun tubes in combat long before they are sufficiently worn to affect accuracy. To overcome this tendency, comparative velocities can be measured by ordnance ballistic and technical service teams without interfering with normal firing to provide the army ordnance officer with a sound basis for the replacement of gun tubes. The teams are few in number and their efforts should be directed towards those artillery battalions known to be approaching the limits of serviceability as shown by the monthly report of artillery matériel.

- (6) The monthly status of artillery matériel (fig. 9) is prepared by each direct support ordnance unit charged with the maintenance of medium and heavy field artillery, heavy anti-aircraft artillery, and heavy tank guns. This report will not include light field artillery (105-mm howitzer) on light and medium tanks because tube life is not an important factor in the replacement of these weapons.

b. Heavy Maintenance Companies.

- (1) During training, the artillery section of heavy maintenance companies may assist direct support companies in providing range service. The equipment of artillery organizations may be sent to ordnance heavy maintenance companies for rehabilitation.
- (2) During combat, the artillery sections of heavy maintenance companies support ordnance collecting points and repair artillery pieces for return to the utility stock. All artillery weapons received should be treated to arrest deterioration. Captured artillery may be received in considerable volume and all types of captured artillery capable of being repaired and which are desired for use by United States or allied forces will be repaired. Artillery repairmen are normally included in all inspection teams where combat vehicles are to be inspected. Qualified artillery inspectors will be designated to assist the inspector of the automotive repair shops in the initial and final inspection of combat vehicles.

229. INSTRUMENT REPAIR SECTION

Instrument repairmen will participate in technical inspections of organizations having instruments. Very little instrument repair

work can be performed in the forward areas, other than the replacement of unserviceable items. As a result, all or nearly all instrument repair work is accomplished in the company shops area where working conditions can be controlled.

230. FIRE CONTROL REPAIR SECTION

The fire control system repairmen must possess a high degree of skill, achieved only through a long training period and much practical experience. Organizational mechanics test the system, make minor repairs, and replace unserviceable assemblies. Unserviceable assemblies are exchanged for serviceable assemblies at the ordnance field maintenance unit. Unserviceable assemblies are repaired by fire control system repairmen and are returned to stock. Contact parties from the fire control section should contact each firing battery daily during service practice and in combat to insure satisfactory service. Exchange procedures may be modified to utilize the contact parties to receive and exchange unserviceable assemblies at the discretion of the company commander.

231. RECORD OF LABOR

Each section foreman will record the number of man-hours of direct labor expended on each job order by repairmen assigned to his section on the number 2 copy of WD AGO Form 811 or WD AGO Form 10-155. This entry will be made whether the work is performed in the armament repair shops or by repairmen from that shop in other repair shops.

232. ADMINISTRATION

a. Files. The armament repair shops maintain no permanent files of correspondence. Temporary files, covering work performed by the armament repair shops, may be maintained at the discretion of the shop supervisor and section foremen, but the company headquarters is the office of record for all correspondence. The shop supervisor and each section foreman will maintain an ordnance work sheet.

b. Shop Registers. A shop register of job orders or section registers may be kept as records of work in the shop, but will not replace the "A" job order register required to be maintained by the company shop office.

c. Group Labor Record. The group labor record is prepared by section foremen and is submitted through the supervisor of the armament repair shops. This report is described in section X.

d. Reports. The daily summary of operations for the armament

repair shops is prepared by the foremen of the various shops sections, and is received and consolidated by the supervisor of the armament repair shops for submission to the company shop office. This report is described in section VIII.

c. Publications. The armament repair shops will maintain a library of technical information, including Ord 1, 6, and 8 of the Ordnance Catalog, modification work orders, lubrication orders, and technical manuals on ordnance matériel. This library will be decentralized to the various shop sections where it will be available to the individual repairmen.

Section VIII. SHOP REPORTS AND FORMS

233. JOB ORDER REGISTER

a. A suggested form for use in registering work requests and job orders is shown in figure 7. The "A" register includes all work requests assigned to the armament repair shops, the "G" register includes all work assigned to the automotive repair shops, and the "S" register includes all work assigned to the service shops.

b. The job order number should identify the shop responsible for accomplishing the major portion of the work and the organization or activity initiating the work request. Job order numbers are assigned to work requests in numerical sequence within each shop. For example, job order number G-101-66 Armd will indicate the 101st work request assigned to the automotive repair shops and that the 66 Armored Battalion initiated the work request.

c. The following are instructions for maintaining the job order register (fig. 7) :

- (1) In column 1, enter the correct nomenclature as given in the Ordnance Catalog.
- (2) In column 2, enter the date received.
- (3) In column 3, indicate the organization or activity initiating the work request. Normally, this will be a supported organization, an ordnance collecting point, or the company supply officer.
- (4) In column 4, enter job order number.
- (5) In column 5, enter the man-hours of labor expended by the principal repair shops as shown on WD AGO Form 811 or WD AGO Form 10-155. Where work is performed for the automotive repair shops by the artillery shop or by the service shops, appropriate entries are made.
- (6) In column 6, state briefly the nature of the work performed, such as replace engine (rpl eng); repair front axle (repr f. axle); etc.

- (7) In column 7, indicate what happened to the job, such as—
 (a) Repaired and returned to using organization (RR).
 (b) Repaired for utility stock (RU).
 (c) Evacuated to higher echelon (E).
 (d) Salvaged for components (S).
(8) In column 8, enter the date the job passed final inspection.

234. STATUS AND MAINTENANCE SUMMARY

The graphical record of operations does not give the detailed position with respect to specific types and models of ordnance equipment. Each ordnance battalion will require a daily status of major and regulated items and maintenance summary (par. 214, fig. 8) from each ordnance field maintenance unit under its control. This report is consolidated by ordnance battalions and is used in conjunction with the graphical record of operations to furnish detailed information. The consolidated status and maintenance summary is submitted to ordnance groups and is transmitted to the army or logistical command ordnance officer without further consolidations by the groups. The status of major and regulated items and maintenance summary may be consolidated by the ordnance staff officers of armies and logistical commands daily or weekly to provide a complete status report of the supply and ordnance maintenance situations within the command. This report is the basis for instructions to ordnance groups to concentrate on the repair of critical major and regulated items and to evacuate excess supplies.

235. SUMMARY OF OPERATIONS

a. General. The mission of ordnance field maintenance units and ordnance battalions and groups is so complex that a system of graphical control is essential to illustrate the mission and the progress being made in accomplishing the mission. Unless a current graphical representation of the mission is available to ordnance company, battalion, and group commanders, it is possible for effort to be misdirected and wasted. A graphical representation of progress compared to the task permits deficient functions to be reinforced and insures a balanced effort from each ordnance field maintenance company, battalion, and group. The daily summary of operations is the basis for the graphical record of operations.

b. The daily summary of operations.

- (1) Each shop section will submit a daily summary of operations to the company shop office. The format of this summary is shown in figure 10. Summaries of operations are prepared by section foremen and are submitted through the respective shop supervisors who may add comments to further explain and amplify the summary.

SECTION _____ ORDNANCE COMPANY _____
AS OF _____ HOURS _____ 19 _____

Figure 10. Daily summary of operations.

- (2) Preparation of the daily summary of operations. Each section foreman will prepare and submit this summary at the close of each day's work. Instructions for preparing the summary are as follows:
- (a) Fill in the designation of the shop section, the organization, cutoff time, and date.
 - (b) In column 1, list the items represented in the shop section, giving proper nomenclature and model as listed in the Ordnance Catalog.
 - (c) In column 2, enter the quantity of each item included in the backlog at the close of the previous day's work.
 - (d) In Column 3, enter the quantity received today.
 - (e) In column 4, enter the quantity of job orders by item which were completed today. By footnote in column 4, indicate the quantity of job orders, by item cancelled, due to salvage or evacuation.
 - (f) In column 5, enter the balance or backlog remaining on hand both in process and awaiting entry into shops at the close of the day.
 - (g) In column 6, enter the quantity, by item, completed or closed out, to date.
 - (h) On a line below the last item listed in column 4, enter the word "total" and under each column place the total quantity. Under column 7 and on the line of totals, compute the percentage of the monthly task that has been completed.

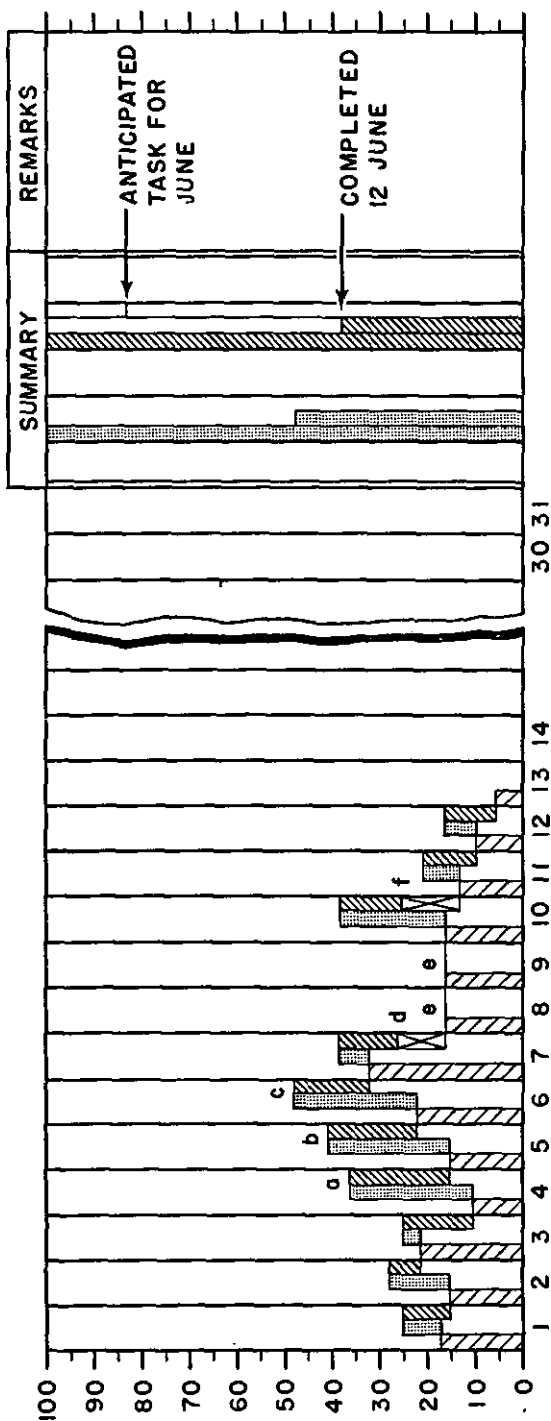
236. GRAPHICAL RECORD OF OPERATIONS

a. The company shop office will record the information contained in the daily summary of operations submitted by the section foremen in the graphical record of operations. The graphical record of operations (fig. 11) is maintained for the information of company, battalion, and group commanders and provides a visual record of the situation in ordnance field maintenance shops and the progress being made in accomplishing the present mission. A separate chart is required for each class of ordnance equipment included in the mission of the ordnance field maintenance unit, battalion, or group. The following charts may be required:

- (1) Small arms.
- (2) Artillery.
- (3) Instruments.
- (4) Fire control systems.
- (5) General and special purpose and special equipment vehicles.
- (6) Combat vehicles.

GRAPHICAL RECORD OF OPERATIONS, — MEDIUM MAINT CO COMBAT VEHICLES

312400 MAY ----- 302400 JUNE



LEGEND:



BACKLOG



RECEIVED



CANCELLED



COMPLETED

NOTE: a,b,c, — REHABILITATION OF 58th ARMD FA BN

d, — 10 MEDIUM TANKS EVACUATED TO 33rd HV MAINT CO

e, — COMPANY DISPLACED FROM _____ TO _____

f, — 12 MEDIUM TANKS EVACUATED TO 33rd HV MAINT CO

Figure 11. Graphical record of operations.

b. Essential information to be shown by the charts includes—

- (1) Backlog on hand at beginning of the period.
- (2) Daily receipts.
- (3) Daily cancellations due to salvage or evacuation.
- (4) Daily completions.
- (5) The task for the period.
- (6) Explanatory remarks.

c. Ordnance battalion and group commanders will maintain similar charts to illustrate the consolidated position within the ordnance battalions and groups. The consolidated position of ordnance battalions and groups will be based on the daily summary of operations submitted by subordinate units.

237. ORGANIZATION RECORD OF SERVICES

a. *Maintenance of records.* The composition of corps, armies, and logistical commands is subject to frequent changes in combat. The relationship of the supported organization and its direct support ordnance company is so vital that special effort is made to maintain a complete and up-to-date record of the services provided each organization, so that this information may be passed to another direct support ordnance company when responsibility for support is transferred. Similar records are required to be kept within divisions, since the information contained therein is of importance in determining the status of equipment in units of the division. The comparative efficiency of units of the division with respect to organizational maintenance and supply economy can be verified by a review of these records.

b. *Contents.*

(1) The organizational record of services is maintained by the company shop office and will consist of the following:

(a) A separate jacket file or files for each organization supported, bearing on its outside cover—

1. The designation of the organization.
2. The names of the commanding officer, the organization supply officer, and the motor maintenance officer.
3. A calendar of all command spot check and technical inspections and copies of letters of transmittal summarizing the results of the inspections.
4. The number 3 copy of Form 811 pertaining to the organization.
5. The record of modification work orders applied to ordnance equipment in the hands of the organization.

(b) When responsibility for maintenance support is transferred to another ordnance unit, the company shop office

clerk will call on the supply records unit clerk to furnish an extract of items due-out to the organizations and a copy of any special supply authorizations approved for the organization, and will include these documents in the organizational record of services.

c. Transfers.

- (1) Within the same ordnance battalion or group, when maintenance responsibility is transferred from one ordnance field maintenance unit to another in the same battalion or group, the organization record of services will be sent to battalion or group headquarters for delivery to the new ordnance field maintenance unit.
- (2) Within the army or logistical command, when maintenance responsibility is transferred from one ordnance field maintenance unit to another within the same major command but in a different ordnance group, the organizational record of services will be sent to the army or logistical command ordnance officer for delivery to the new ordnance field maintenance unit.
- (3) Between major commands, when an organization is transferred from one major command to another, the organizational record of services will be sent to the ordnance officer of the old major command for transmission to the ordnance officer of the new major command.

238. MONTHLY SUMMARY OF ARTILLERY MATERIEL

This summary (fig. 9) is prepared by direct support ordnance units and reflects the condition of medium and heavy field artillery, heavy antiaircraft artillery, and the main armament of heavy gun tanks. The summary is submitted to higher headquarters as required and is utilized by the maintenance officers and the supply officers of battalions, groups, and the ordnance staff officers of armies and logistical commands for computing supply and maintenance requirements.

239. UNSATISFACTORY EQUIPMENT REPORT

a. The Unsatisfactory Equipment Report (DA AGO Form 468) provides a medium for improving and maintaining quality control throughout the Ordnance Corps. The report is used to bring deficiencies in the design of equipment and technical inaccuracies in instructions and doctrine to the attention of staff officers responsible for initiating corrective action. By means of this report, either the user or supporting ordnance unit can make a suggestion which is channeled directly to the responsible staff officer.

b. The Unsatisfactory Equipment Report (DA AGO Form 468) is prepared in accordance with SR 700-45-5 and forwarded by the officer in charge of the office or activity concerned direct to the Office, Chief of Ordnance, Washington 25, D. C. The Unsatisfactory Report, AF Form 54, will be used as prescribed in AFR 65-26 in reporting on Air Force procured items of supply and equipment.

Section IX. ORDNANCE INSPECTIONS

240. GENERAL

a. The inspection of ordnance equipment in the hands of troops is an essential feature of ordnance maintenance and supply in the field. It has been demonstrated that the efficiency of ordnance maintenance and supply varies directly with the effectiveness of the inspection system. Experience has demonstrated that ten man-hours expended in a properly directed inspection system will result in a saving of fifty man-hours in field maintenance work. Therefore, no command can afford to neglect its inspection system, nor can an ordnance staff officer or ordnance unit properly plead insufficient man power to implement an effective inspection system.

b. The inspection of ordnance equipment at frequent intervals, and especially before and after operations, is a procedure that must be developed early in the training cycle to train both the using organization and the supporting ordnance company in proper maintenance standards. Properly conducted inspections will develop mutual confidence between the using organization and the supporting ordnance unit. The using unit is taught to conserve its equipment and the ordnance unit is trained to assist its customers.

c. Inspection of matériel by commanding officers and operating personnel is a continuous process, but effort is often misdirected and frequently becomes superficial. Aggressive supervision of organizational maintenance by ordnance inspectors keeps this effort on a practical basis, affords a method of giving balanced instruction, and prevents perfunctory performance of duties from becoming an accepted standard.

241. PURPOSES OF ORDNANCE INSPECTIONS

Primary purposes of ordnance inspections are to—

a. Insure that preventive maintenance services are effective in detecting and correcting incipient failures of matériel before unserviceability results.

b. Ascertain the serviceability, completeness, and field readiness of ordnance matériel in the hands of troops. Inspections are continued during combat to determine the need for rehabilitation and replace-

ment. Inspections conducted before operations insure that equipment is ready for combat. After operations, inspections determine action required to restore combat effectiveness.

c. Develop teamwork between the using organization and supporting ordnance unit.

d. Render assistance in matters effecting ordnance supply.

e. Provide instruction in administration and operation of organizational supply and maintenance.

f. Detect and analyze the most prevalent deficiencies in maintenance of matériel in order that the attention of commanding officers, maintenance personnel, and design engineers may be directed toward specific improvement.

g. Anticipate unusual supply demands.

h. Evaluate relative efficiency of organizational maintenance in units of the command.

i. Determine deficiencies in training and make appropriate recommendations for emphasis in the training of using units.

j. Record the condition of ordnance matériel in the hands of troops periodically, as a means of determining responsibility for unwarranted deterioration and abuse.

242. TYPES OF INSPECTIONS

a. There are three general types of inspections.

(1) Command inspections are conducted by all commanders and are discussed in paragraph 81. Ordnance commanders conduct frequent inspection of all equipment in the hands of their units. The commander must not become so involved in the inspection of ordnance equipment that the inspection of all equipment in his own unit is neglected.

(2) Spot-check inspections of ordnance matériel in the hands of troops are conducted at frequent intervals by qualified ordnance personnel under the direct supervision of ordnance maintenance and supply officers, to verify the adequacy and efficiency of organizational supply and maintenance. Commanders having responsibility for field maintenance prescribe the frequency of spot-check inspections and the percentage of equipment to be inspected. As a minimum requirement, the spot-check inspection system will require all organizational maintenance facilities and 10 percent of the ordnance equipment in the hands of each unit, to be inspected at least twice annually.

(3) Technical inspections of all ordnance matériel in the hands of troops and in utility stocks will be conducted once an-

nually by qualified ordnance personnel to ascertain serviceability, maintenance requirements, and the need for replacements.

b. There are other types of ordnance inspections which are beyond the scope of this manual. Examples are—the surveillance of depot stocks of ordnance matériel, inspection of matériel received from new production, and inspections of captured enemy matériel.

243. INSPECTION OF ARMAMENT AND INSTRUMENTS

a. The procedures for the annual and spot-check inspections of instruments and armament are similar.

b. During the annual technical inspection, an inspection team of sufficient size to make repairs of armament on the spot should be provided. Sufficient replacement items, spare parts, and cleaning and preserving materials should be carried by the inspection team to take care of repairs and replenish organizational allowances.

c. During spot-check inspections, no effort is made to make repairs or to replenish supplies.

d. A complete technical inspection of armament is desirable before the annual range practice. In newly organized units, such an inspection is important and should be required in all cases.

e. During combat, armament is inspected and repaired before and after operations to restore combat effectiveness. When units are withdrawn from combat for reconditioning of equipment and rest, a technical inspection of armament should be made.

244. INSPECTION OF VEHICLES

a. Spot-Check Inspections.

- (1) Because of the complexity of motor vehicles, their continuous operation by relatively unskilled personnel, and the rapid turnover of operating personnel, it is essential that frequent spot-check inspections supplement annual inspections.
- (2) Spot-check inspections of automotive matériel will be directed towards progressively correcting improper or deficient execution of preventive maintenance services. To accomplish this, the spot-check inspection team should devote 5 percent of its time to an analysis of prevalent maintenance deficiencies, as reflected by the uncorrected defects on vehicles presented for higher echelon repairs. This may involve a summary of 100 to 200 technical inspections performed by the initial inspection sections of the field maintenance units during the preceding month to determine a frequency rate of prevalent defects. A command letter directing unit commanders to correct and eliminate these defects should be

prepared. The spot-check inspection team should follow-up this program to determine results.

- (3) Economical application of effort is an essential feature of successful organizational maintenance. To assist unit commanders in obtaining economy of effort, the spot-check inspection team should devote 70 percent of its effort to scheduled inspections at unit motor parks. (The administration of preventive maintenance services and supply should be analyzed. Unbiased observations on the number, qualifications, performance, and attitude of the operating personnel should be made. The adequacy of tools, equipment, and facilities should be considered. The officer in charge will select 10 percent of the vehicles available for inspection.) Care will be exercised to select vehicles in current operation and will include those scheduled for service and those recently serviced. Dispatch records will be examined to prevent any vehicle from being hidden from the spot-check.
- (4) Supplies should be verified to detect and discourage hoarding as well as to establish adequate stock levels. Action on requisitions will be analyzed to determine action being taken by using units and by direct support ordnance units to reduce out-of-service time. Lubricants will be inspected to insure the use of proper greases and oils. Technical publications will be inspected to insure that these are available and being used.
- (5) Since any scheduled inspection will encounter a measure of preparation and thus may not reflect the true condition of vehicles, a barrier system of spot-check inspections should be utilized and should require 25 percent of the spot-check inspection team's time. A barrier will be established at a well-traveled intersection, an installation, a gas station, or a ration issue point. Vehicles will be required to halt and undergo inspection. Military police assistance will be utilized to halt and detain vehicles. Care will be exercised to avoid halting and detaining ambulances, couriers, and other emergency vehicles. No vehicles will be detained over thirty minutes and a backlog will not be permitted to build up. Unit convoys, labor details, and groups enroute to and from instruction or recreation will not be halted for inspection. Combat vehicles will not be halted for inspection at barriers.
- (6) The condition of vehicles will be shown on individual inspection sheets and comments of a general nature will be placed on an inspection cover sheet. Duplicate copies of an inspection work sheet will be left with the unit inspected or,

in the case of vehicles inspected at barriers, will be transmitted through message center daily.

b. Annual Technical Inspection of Vehicles.

- (1) The annual technical inspection of vehicles is a time consuming operation which requires planning and supervision of a high degree. The technical inspection work sheet (WD AGO Form 461, 462, or 463) will be used, except that in combat a less complicated form may be approved by the army or logistical command ordnance staff officer.
- (2) During combat, complete technical inspections should be conducted before and after operations to restore combat effectiveness. When units are withdrawn from combat for rehabilitation of equipment and rest, a technical inspection of vehicles should be made.

245. ELIMINATION OF DUPLICATE INSPECTIONS

a. Any system which results in too frequent inspection of ordnance equipment in the hands of troops is unduly harassing to the using units. Duplication of inspections will create resentment and thus defeat one of the principal purposes of the inspection system.

b. The use of one type of inspection to meet other requirements will avoid duplication. An ordnance inspection made as part of a command inspection may satisfy spot-check requirements of the inspection program. The continuous spot-check inspection system may be of such a magnitude and scope as to satisfy the requirement for an annual technical inspection. The condition of equipment recorded on a technical inspection work sheet prepared in conjunction with recent repairs by a field maintenance shop may be accepted to meet the requirement for an annual technical inspection. Proper management of the inspection system by responsible ordnance staff officers will eliminate duplicate inspections without limiting the purpose of the inspection system.

246. THE CONDUCT OF ORDNANCE INSPECTIONS

a. Detailed technical information on the conduct of ordnance inspections is contained in TM 9-1100 and 9-2810.

b. Inspection schedules should be prepared by the responsible ordnance staff officer and coordinated within the headquarters to insure the minimum interference with training and other operations. When approved, the inspection schedule should be published to the command.

c. Prior to the scheduled date of the inspection, a representative of the ordnance unit charged with conducting the inspection should contact the unit to be inspected, verify the quantity of ordnance

matériel to be inspected, and outline the requirements for displaying matériel.

d. Standards of inspection will be high but realistic. Border-line decisions will favor the unit. Inconsequential deficiencies will not be reported unless they establish a trend or by their accumulation represent an undesirable condition. The effectiveness of the team and the inspection system depends upon the accuracy, technical knowledge, and construction attitude of individuals assigned to this work.

247. THE ORGANIZATION OF INSPECTION TEAMS

a. The inspection team must be well organized and highly trained in order to accomplish its mission. The proper organization and procedures will require considerable study before adequate standards are reached. The team should be trained in the ordnance company before it is permitted to participate in inspections. Individuals should be given a limited number of points to inspect and required to study and practice them until perfection is attained. Time-studies should be made and different combinations should be tried until the shortest possible time is required per item to be inspected. This practice should also be directed towards improving the display of equipment to be inspected so as to make the optimum use of available time.

b. The inspection team should review pertinent technical publications covering the matériel to be inspected and will assemble the necessary inspection tools and gauges and prepare the inspection forms. The personal appearance and the condition of the equipment used by the inspection team will be the responsibility of the officer in charge and should be beyond reproach.

c. The officer in charge of the inspection team is responsible for contacting the unit to be inspected and for making all arrangements for the inspections. He will supervise the conduct of the inspection and verify the condition of the equipment undergoing inspection. He will collect the inspection work sheets and leave a copy with the commander of the unit being inspected. He will prepare a cover or information sheet for each unit inspected and process the completed inspection report through ordnance channels to the ordnance staff officer directing the inspection.

248. AUTHORITY FOR ORDNANCE INSPECTIONS

The ordnance staff officer obtains his authority to establish an ordnance inspection system from the commander, who prescribes the extent and scope of the inspection system. An ordnance field maintenance unit has no right to inspect ordnance equipment in the hands of troops until specifically directed to do so by the commander or

by the ordnance staff officer. The inspection of ordnance equipment in the hands of troops is an inspection conducted for the commander. It is incumbent on ordnance inspectors and those being inspected to regard the inspection in that light.

249. STANDARDS

a. Responsible ordnance staff officers should establish standards for use in grading both spot-check and annual technical inspections. The standard is the average number of major deficiencies per item of equipment inspected. These standards should be factual and will require revision from time to time. Standards should be capable of achievement but should not be relaxed to tolerate poor organizational maintenance.

b. Major deficiencies shall be defined as deficiencies which, if not corrected immediately, would cause vehicle failure, unwarranted wear, or cause the equipment to be operated in an unsafe condition. Minor deficiencies shall be defined as deficiencies which will not cause subsequent breakdown or do not jeopardize safe operation of the equipment. In arriving at the above standards, only major deficiencies are counted.

c. Until actual experience is attained, the following standards may be used. Satisfactory maintenance deficiency averages are as follows:

Vehicles	2.80
Trailers .....	.90
Small Arms .....	.20
Artillery	2.00
Instruments .....	.18

d. To attain an adjectival rating, the following chart may be utilized:

	<i>SUP.</i>	<i>EX.</i>	<i>V.S.</i>	<i>SAT.</i>	<i>UNSAT.</i>
Vehicles .....	.00 to .70	.71 to 1.40	1.41 to 2.10	2.11 to 2.80	Over 2.80
Small Arms ..	.00 to .05	.06 to .10	.11 to .15	.16 to .20	Over .20
Artillery .....	.00 to .50	.51 to 1.00	1.01 to 1.50	1.51 to 2.00	Over 2.00
Instruments .	.00 to .045	.046 to .09	.10 to .135	.136 to .18	Over .18
Trailer .....	.00 to .22	.23 to .45	.46 to .67	.68 to .90	Over .90

e. Forms and records may be graded on the following basis:

	<i>SUP.</i>	<i>EX.</i>	<i>V.S.</i>	<i>SAT.</i>	<i>UNSAT.</i>
Deficiencies	0	1	2	3	4

250. REFERENCES

a. Samples of suggested inspection forms other than those included in the references cited in *b* below are included in Appendix II.

b. Information covering the inspection and maintenance of ordnance matériel is contained in the 9 series of the Department of the

Army technical manuals. Subnumbers of the technical manuals are grouped as follows: TM 9-200 to TM 9-999 covers organizational maintenance (operating instructions, servicing, and minor repair and replacement); TM 9-1200 to TM 9-1899 covers field maintenance (major repair, replacement, and reconditioning); TM 9-2200 to TM 9-2999 contains instruction guides covering information or instructions generally applied to different types of matériel. Detailed instruction in the procedure and use of forms covering the inspection of ordnance matériel is contained in TM 9-1100 and TM 9-2810. Allowances of cleaning and preserving matériel, spare parts, and accessories, and articles for instructional purposes, are contained in ORD 7 and 8 series SNL's of the Department of the Army pamphlet covering each major item of ordnance equipment.

Section X. WORK PERFORMANCE

251. GENERAL

a. The provisions of SR 35-4300-1 are applicable at installations in the continental United States. The provisions of this special regulation are not applicable to field exercises, an oversea command, or a theater of operations.

b. While the cost accounting system prescribed in SR 35-4300-1 reconciles work performance with cost expressed in dollars, intervening steps interpret work performance in terms of the man-hours expended. This information is of importance to ordnance battalions and group commanders and to ordnance staff officers at all times and under all conditions of operations. There is never a surplus or reserve of ordnance units and all ordnance battalion and group commanders and ordnance staff officers of armies and logistical commands must constantly analyze the mission, and the progress achieved in accomplishing the mission, to insure that important tasks are emphasized and that unimportant and nonproductive functions are deferred or abandoned.

c. Ordnance battalion and group commanders and ordnance staff officers of armies and logistical commands require a system for measuring work performance in order to plan future work, to determine current progress in accomplishing tasks, and to evaluate the comparative efficiency of ordnance units and of ordnance unit commanders. The system of measuring work performance outlined in this section incorporates many of the reports and methods required by SR 35-4300-1.

252. STATISTICAL RECORDS

The complexity of ordnance maintenance and supply requires records to be maintained in statistical form. One of the most im-

portant responsibilities of ordnance management is to determine the statistical records required to reflect past experience, record current progress, and to forecast future demands. The unit of measure must be carefully determined to portray the desired information. Ordnance matériel involves both tonnage and specific items, but information on tonnages received, stored, distributed, and awaiting disposition instructions, while important as a general measure of activity, provides incomplete information as to the overall efficiency of the retail supply service. The percentage of items requested compared to refusals and excessive delay in issue does provide a clear picture of retail efficiency. Indirect results may often be recorded to reflect progress. For example, the number of operable trucks in Transportation Corps truck companies is a fair measure of the efficiency of supporting ordnance maintenance companies. Progress of maintenance operations is portrayed readily in terms of the backlog at the beginning of a period, receipts and accomplishments during the period, and backlog at end of the period. Statistical records are required to show the planning objective for the current period and for future periods to insure that ordnance service is actually being planned and operated according to plans. Statistical records are limited to essential information and form the basis for periodic reports for estimates of the situation and for the historical record.

253. POST WAR PLANNER

The statistical data compiled as a result of man power and facilities utilization studies is invaluable to agencies engaged in the review and revision of tables of organization and equipment, field manuals, and training literature, if all the variables are shown. For example: Was indigenous labor used? If so, how much? What was the military strength of the organization? What equipment was employed? What were the climatic conditions, etc.? Unless all of the facts are known, information will be of little or no value to the post war planner.

254. RESPONSIBILITY FOR WORK PERFORMANCE

a. The company commanders of ordnance field maintenance companies are responsible for the quality and quantity of production accomplished by their companies. Methods for insuring the quality of production are dependent on the effectiveness of shop inspection. The quantity of production will be affected by the tactical situation and by working conditions. The results achieved by direct support units in the combat zone are not all comparable to those achieved by heavy maintenance companies in the army service area. However, the results achieved by direct support units in the same area are compara-

ble, or at least explainable, because both the tactical situation and the working conditions can be compared in each instance.

b. The company commander of an ordnance field maintenance unit is responsible for preparing and submitting the reports by which the work performance of his unit can be compared with that of adjacent units of the same type.

c. Ordnance battalion and group commanders are responsible for monitoring the preparation of work performance reports to insure that reporting methods are uniform and that reports are factual and representative of actual conditions.

d. Army and logistical command ordnance staff officers are responsible for analyzing work performance reports submitted by ordnance field maintenance units to determine the average performance for the command and the comparative averages for the various types of units within the command. Based on the result of this analysis, ordnance battalion and group commanders are informed which companies are below average in work performance in order that they may be more closely supervised, as well as which companies are outstanding in order that responsible commander and supervisory personnel may be rewarded.

255. FUNCTIONS

The mission of ordnance field maintenance units includes several functions, all of which contribute towards the primary mission of repairing ordnance major items and assemblies. The functions listed below are not all that may be performed by an ordnance field maintenance unit, and the list may be augmented to suit the circumstances.

a. *Inspection of Organizational Maintenance.* This includes the inspection of ordnance equipment in the hands of troops, the instruction of organizational maintenance personnel, the annual before and after operations technical inspections of ordnance equipment in the hands of troops, the time of liaison parties spent in contacting units, and the time of personnel employed on range service. The unit of measure is the man-hours expended, including travel time. The unit of work performance is the quantity of major items actually inspected or served.

b. *Repair of Ordnance Equipment.* This includes the initial and final inspection of ordnance equipment repaired in company shops, and the actual labor and supervisory personnel employed in company shops and the time of working parties, including travel time. The unit of measure is the man-hours expended. The unit of work performance is the quantity of major items actually passed by final inspection.

c. *Salvage of Ordnance Equipment.* This includes the classification of ordnance matériel, the removal and preservation of assemblies

and parts, and the transportation of serviceable and unserviceable matériel. The unit of measure is the man-hours expended. The unit of work performance is the quantity of major items salvaged.

d. Reclamation of Ordnance Matériel. This includes the inspection and repair of assemblies and parts. The unit of measure is the man-hours expended. No unit of work performance is established for this function.

e. Supply. This includes supply control; receiving, storage, and issue of supplies; receiving, storage, and preservation of unserviceable supplies turned in by organizations; and the shipping and transportation of supplies. The unit of measure is the man-hours expended. No unit of work performance is established for this function.

f. Miscellaneous Services. This includes the work done by the service section and by the recovery section. The unit of measure is the man-hours expended. No unit of work performance is established for this function.

g. Overhead. This includes the time of the company headquarters, organizational supply, food service, organizational motor maintenance groups; and of personnel employed on housekeeping, construction, police, and fatigue details. The unit of measure is the man-hours expended.

h. Military. This includes the time of security guards and the time of all individuals engaged in military training. Unit of measure is the number of man-hours expended.

256. GROUP LABOR RECORD

a. Each supervisor or foremen responsible for one or more functions will initiate a group labor record for each function, using either DA AGO Form 14-151, or on the suggested form as shown in figure 12.

b. The group labor record will be prepared as follows:

- (1) *Period.* Enter the beginning and ending dates of the reporting period, including the initial and terminal hour.
- (2) *Organization.* Enter the title of the shop or section and the designation of the company.
- (3) *Function.* Enter the title of the function.
- (4) *Columnar information.* In the left hand column, list all the military grades normally assigned to the shop or section. Under the columns headed "Daily Entries" in the column corresponding to the date, enter the number of individuals, by grade, employed on the function to the nearest whole figure, for example: If fourteen privates were employed for half a day on August 5th, enter the figure seven opposite the line titled: "Privates," in the 5th column. Total the number of individuals for each day at the bottom of each column and

enter the average length of the working day below the total of personnel. On the next line extend the total number of man-hours devoted to the function for that day.

c. At the close of the period, turn in the group labor record to the company shop office.

d. The shop office clerk will assemble the group labor record and prepare a consolidated record on a Form 14-151, or the suggested improvised form, as follows:

- (1) *Period.* Enter the beginning and ending date of the reporting period, including the initial and terminal hours .
- (2) *Organization.* Enter the designation of the company.
- (3) *Function.* Write "Consolidation."
- (4) *Columnar information.* In the left hand column write "Morning Report" on the first line. On each alternate line below the first line, enter the title of a function. In the column corresponding to the date and on the line titled "Morning Report," enter the number of individuals present for duty with the company for that day. On each line titled with a function, enter the number of individuals employed on that function for that day and on the alternate line enter the number of man-hours devoted to that function. Under the column headed "Total" enter the total number of individuals and the total number of man-hours for the period. Compare the total number of individuals available as shown by the morning report with the total number employed on each function and enter the percentage in the column headed "Percentage." Total the percentages. The difference between the total and 100 percent is an indication of the effective utilization of available personnel within the reporting activity.

257. STANDARD OF WORK PERFORMANCE

a. As the result of the group labor records submitted by ordnance field maintenance units, ordnance battalion and group commanders and ordnance staff officers of armies and logistical commands are able to determine standards of work performance for ordnance field maintenance. The average number of man-hours of direct labor required to inspect and to repair a major item of ordnance equipment may be determined as well as the ratio of non-productive labor. The ratio of supporting functions such as supply, salvage, and reclamation to principal functions, such as the inspection of organizational maintenance and the repair of major items of ordnance equipment is established as a basis for further management studies.

b. The standard of work performance serves as an objective for supervisors and is a yardstick for evaluating the accomplishments

of the ordnance field maintenance unit. Obviously, local conditions will affect the accomplishment of work and adverse working conditions can be accounted for by the use of an adjustment factor to recognize such conditions as weather, location, enemy action, etc., so that the adjusted standard of work performance is compatible with actual working conditions. Standards of work performance are determined for each echelon of ordnance field maintenance and are not applicable throughout an army or a large logistical command, since it would be inappropriate to compare the work performance of an ordnance heavy automotive maintenance company located in good buildings near the army rear boundary with the work performance of an ordnance medium automotive maintenance company employed in the forward direct support battalion harassed by enemy artillery fire and exposed to the elements.

c. The standard or work performance is a quantitative measure and quality is reflected only to the extent that work that must be done over reduces the quantity produced. The only way that quality of work can be verified is by frequent inspections and contacts with supported organizations to determine if they are completely satisfied.

d. Ordnance battalion and group commanders and the ordnance staff officers of armies and logistical commands should carefully evaluate all stages of the work performance reporting system to insure that functions are descriptive and uniformly applied. Company commanders whose units are habitually below the proper adjusted standard of work performance should be replaced, and the company commander and supervisors of outstanding companies should be considered for increased responsibilities.

CHAPTER 12

DEPOT MAINTENANCE SHOPS

Section I. GENERAL

258. GENERAL

Depot maintenance units are provided in theaters of operations as the most economical means for rebuild or maintenance of the large volumes of unserviceable matériel that eventually accumulate in the theater. Production or assembly line methods are used practically throughout all shops. The organizations designed for such type operations are the automotive rebuild battalion and the armament rebuild battalion. The equipment of each battalion generally will be installed in four or more separate shop buildings. These buildings will include facilities for—

- a. Storing parts and supplies.
- b. Maintenance shops for actual rebuilding of matériel.
- c. Service section shops to assist the rebuild shops.
- d. A shop headquarters to direct operations.

259. TYPES OF SHOPS

a. *Production line shops.* Where a large volume of ordnance equipment or assemblies must be rebuilt or repaired to the same standards, and the procedure involves a series of independent operations, a production line may be established. A production line is a series of stations through which the item is passed and certain operations are accomplished at each station. Workers of limited capabilities may be highly trained to perform each operation in a skilled manner in a relatively short time. The production line may operate continuously to rebuild or repair one type of ordnance matériel, or it may be operated for several months on one type of item, then be shut down and converted to another item. Parts requirements are computed for the entire run on the basis of experience with a limited run or a mortality study, and the entire requirement should be pre-stocked. Examples of production lines are engine and power-train rebuild shops. The production lines may also be adapted to the repair of light and medium weight wheel vehicles.

b. *Job shops.* Where the type of work varies between jobs, or the item is extremely difficult to maneuver, the job or bay method is used. Here the item is placed in a bay and work is done by the same crew, except that parts and assemblies may be sent to various service shops for work. Artillery and armored vehicle shops are

usually operated as job shops. Parts requirements are computed for each job and are obtained before work is initiated.

c. Bench shops. Small items requiring a high degree of technical skill may be repaired by a worker at a bench. Examples are carburetor and ignition shops, small arms shops, and fire control instrument shops. Because of the volume of work done by these shops, it is generally possible to maintain a stock of parts determined by experience.

d. Combinations of shops. Any combination of production line, job, or bench methods may be utilized in the same shop.

260. FUNCTIONS

The functions of ordnance depot maintenance shops include—

a. Rebuild of ordnance matériel and reclamation of tools, equipment and accessories.

b. Performance of overflow work from field maintenance companies.

c. Modification of matériel as directed.

261. SHOP LAYOUT

Under normal conditions approximately 70,000 to 100,000 square feet of floor space are necessary for depot maintenance shop. This total area is usually divided into four or five main shops and one depot supply section. It is desirable that all of the buildings be located as close together as possible to facilitate close supervision and control. If the shops are located in an area subjected to enemy aerial bombardment, they should be dispersed to minimize the effect on over-all production of direct bomb hits on any one of the shops. Electrical generators are provided to supply all buildings with 110 volt single-phase and 220 volt three-phase electrical current if a local source of current is not available. TM 5-280 presents the types of construction available in theaters of operation. Where no suitable facilities are available, the Corps of Engineers is responsible for such construction.

Section II. ORGANIZATION AND FUNCTIONS

262. GENERAL

An ordnance depot maintenance shop may be operated by either an automotive or an armament rebuild battalion. The former is organized for repair or rebuild of general purpose vehicles and assemblies and reclamation of tools and equipment common to general purpose automotive vehicles. The latter is organized for repair or rebuild of armored vehicles, artillery matériel, fire control instru-

ments, and small arms. The companies of the battalion operate as a unit and are dependent on a common depot supply service and service section facilities.

263. OPERATIONS

Many of the operations of the two battalions are similar. The principle difference is that the automotive rebuild shops, in general, repair or rebuild assemblies and subassemblies on an assembly line basis, and the armament shops ordinarily rebuild major items, assemblies, and subassemblies on a job basis. In the following paragraphs, the general procedure as outlined may be used by either battalion with modifications. There will be many occasions when, due to the volume of work or the need for critical items, the ordnance depot maintenance shop will function as a mass production or production line organization. Individual items as such are not considered by serial number but items are handled by type in bulk. The organization of the depot maintenance shop will have to be adjusted to these special conditions. It will also be necessary in many instances to supplement the original battalions with extra military or civilian personnel. This organization is accomplished by arranging the repair of assemblies and subassemblies so that as they are completed they arrive at the proper place on the main assembly line. Each of the shops will run an assembly line or "bay" and such necessary feeder assembly lines as are needed to accomplish the complete repair and assembly of the items assigned. The number of stations on the main line will depend upon the extent of the breakdown of the item, the personnel available, and the volume and speed of production. When the military personnel of the shop are augmented by civilians or other military organizations, supervision of one or a number of stations is obtained by placing key military personnel in charge. Supply of necessary items to the various stations will be controlled from the production office.

264. SECTION FUNCTIONS

a. Headquarters Section. This section consists of the Commanding Officer, Executive Officer, and the personnel required to maintain battalion headquarters records.

- (1) *Commanding Officer.* The battalion commander is directly responsible to the commanding officer of the next higher headquarters, normally ordnance group headquarters, or to the ordnance officer of the section or zone. As shop commander, he is responsible for all phases of the operation and administration of the shop.

- (2) *Executive Officer.* The executive officer is responsible for

supervision of operations of the rebuild shops and serves as shop commander in the absence of the battalion commander.

b. *Production Control Section.* This section is the headquarters for the various shops. It is through this section that the production control officer controls the operations of the shop. It functions as follows:

- (1) Exercises supervision of all shops and shop activities.
- (2) Accomplishes reports to proper authorities. Maintains all records on shop operation.
- (3) Establishes priorities in accordance with existing directives for work within the shops.
- (4) Ascertains that shop heads have knowledge of procedures for securing necessary supplies and an understanding of methods of routing the flow of work and forms.
- (5) Ascertains that repair and maintenance of utilities are accomplished.
- (6) Insures that any other activities assigned by the maintenance officer are properly performed.

c. *Inspection Section.* The inspection section is directly responsible to the commanding officer and maintains technical jurisdiction over the inspectional procedures utilized throughout the shops. Technical inspectors are listed in the appropriate table of organization and will be utilized as required by the inspection section under the commanding officer. The functional responsibilities of the inspection section are as follows:

- (1) It inspects matériel received and determines the nature of unserviceability, and classifies all matériel as scrap, reclaimable, or repairable.
- (2) It inspects and diagnoses all repairable matériel received, and determines work required to return the matériel to serviceability. This section fills out "Work to be Done" section of work order.
- (3) It inspects work in process and makes thorough inspection of completed jobs.
- (4) It insures that work performed complies fully with approved standards, and recommends that, if necessary, it be reprocessed.
- (5) It may make recommendations to commanding officer to release matériel not meeting precise standards.
- (6) It verifies that shop practices, procedures, and performance of work are in compliance with provisions of the technical manuals, modification work orders, and similar authoritative directives.
- (7) It certifies all property turn-in slips on scrap matériel, verifying that no repairable items are scrapped.

- (8) It forms inspection teams for dispatch to remote maintenance installations where the volume of accumulated unserviceable matériel requires the decision of such a team as to which items are to be returned for immediate reclamation.

d. Battalion Supply Section. This section procures, stores, and issues all supplies required to operate the shops and receives and stores unserviceable matériel awaiting repair or rebuild. Functions of this section are as follows:

- (1) Maintains a stock record account covering property on hand, in storage, or in process within the shops. A separate stock record account should be maintained on unserviceable property.
- (2) Assists the inspection section in identification of unserviceable matériel and stores all such matériel.
- (3) Issues unserviceable matériel to be rebuilt to the shops as requested by the maintenance officer.
- (4) Issues parts and supplies to shop service supply section as needed.
- (5) Exercises general supervision over all shop service supply activities.
- (6) Maintains such other records as are necessary.
- (7) Back-orders parts requested which are not immediately available and insures delivery of such parts to the proper shop immediately upon their receipt.
- (8) Procures necessary parts on the open market when authorized. Follows up on the status of all unfilled requisitions.
- (9) Maintains statistical records of current supply activities.
- (10) Receives, stores, and ships all matériel rebuilt by the shops as directed by higher headquarters.

e. Shop Service Supply Section. Each shop service supply section is responsible to the shop supply officer that all parts and supplies are available when needed. Functional responsibilities of each shop service supply section are:

- (1) Procurement from the battalion supply section those parts or supplies required for processing work orders.
- (2) Issuing parts and supplies to shops or individual workmen.
- (3) Constantly checking on all items back-ordered and keeping shop foremen informed as to the status of items on back order.
- (4) Maintaining statistical records on parts consumption.
- (5) Delivering all matériel rebuilt within the shop and returning all excess property to the battalion supply section.

f. Rebuild or Maintenance Shops. The maintenance shop officers and foremen are responsible to the maintenance officer for their particular shop. Functional responsibilities of each shop are:

- (1) Insuring that work being performed in the shop is covered by a work order.
- (2) Maintaining sufficient records to account for the status of all items in process and preparing daily reports of shop production for the maintenance officer. .
- (3) Maintaining a layout chart showing the location of machinery and equipment and the flow of work through each station, section, or department of the shop.
- (4) Modifying ordnance matériel as directed by higher authority.
- (5) Reconditioning and/or rebuilding of major items, unit assemblies, subassemblies, and component parts of the matériel assigned to the shop.

g. Service Shop. This shop is responsible for the installation and maintenance of shop utilities; fabrication and distribution of special tools, jigs, and fixtures; repair of tools and equipment; and performance of all work beyond the scope of service sections within the individual shops.

h. Administrative Section. The administrative and headquarters sections of the various companies include the company commander and other personnel responsible for the military organization of their units. Since the administrative and housekeeping functions of this section are common to all military organizations no detailed discussion will be covered here.

265. CHANNELS

An ordnance depot maintenance shop will be one of several activities under the supervision and control of a headquarters and headquarters company, Ordnance group (T/O&E 9-12). Each headquarters must keep higher and lower headquarters informed on all activities of mutual interest.

Section III. SHOP OPERATING PROCEDURES

266. GENERAL

Maximum production from an ordnance depot maintenance shop depends upon an orderly and uniform flow of matériel through the shops. Such a flow of matériel can be maintained and regulated only if adequate records are instituted and effectively used. All information relative to the status of matériel awaiting repair, in process, or completed to date must be available in production control. This information originates from the individual sections through section reports to the company shop headquarters and from there to production control office. The following paragraphs furnish an overall picture of

the flow of matériel through the shop, the records and reports which must be maintained, and procedures which must be followed.

267. MAINTENANCE RECORDS

The production control officer is responsible for all maintenance operations and administration. He controls the operations of the shops through the production control section. The company shop office clerks perform their duties under the jurisdiction of the production control section. Individual shop foremen within each shop are responsible for initiation of all shop records and reports and submitting them to their respective shop office clerks working in the production control section, whose duties consist of extracting and correlating information regarding shop operations. The shop clerks detailed by each company to work in production control are responsible for the maintenance of all records and reports pertaining to the shops operated by their respective companies.

268. RECEIPT OF UNSERVICEABLE MATÉRIEL

a. The production task to be accomplished for a specified period is determined by the production control office, based on directives from the theater stock control point, the known or estimated supply requirements, and the unserviceable property account. Unserviceable major items, assemblies, and parts are delivered to the battalion supply section of the rebuild shop through ordnance collecting points or other evacuation channels. Such unserviceable matériel, generally, will be received on a Department of the Army shipping document. As it is received, it is marked with an identification tag giving the correct nomenclature and part number. If matériel is received short of subassemblies, liaison between the production control section and the battalion supply section must be maintained so that these subassemblies are on hand in the supply section when the major assembly is introduced into the shop.

b. After all units have been identified and tagged, a duplicate copy of the shipping document is prepared. The original is posted to the unserviceable stock record account in the supply section and filed in the voucher file. The duplicate is forwarded to production control for posting to the unserviceable property cards (par. 280). If sufficient copies of the shipping document have been received initially, it will not be necessary to prepare a duplicate.

c. Identification and tagging is performed by technical inspectors in cooperation with supply personnel.

d. Maintaining the unserviceable property stock record account involves the following:

- (1) The battalion supply section is responsible for maintaining

the unserviceable stock record account for the depot maintenance shop. The stock record cards must indicate the number of unserviceable units on hand in reclamation warehouses or being processed in the shops. Vouchers which are posted to these cards are—

- (a) Debit vouchers (shipping documents or property turn-in slips received with shipments of unserviceable matériel).
- (b) Credit vouchers (property turn-in slips signed by either the salvage officer or the battalion supply officer).
- (2) All vouchers will be assigned numbers from a voucher register and these numbers will be posted to the stock record cards when making an entry.
- (3) Locations of unserviceable matériel must be indicated on the stock record cards.
- (4) Unserviceable matériel delivered to the shops is listed on property issue slips marked with the appropriate work order number and kept in a special file. All property turn-in slips which apply to this work-order number are posted to the issue slips on file as well as to the appropriate stock record cards. All items shown on each issue slip must be accounted for before the issue slip can be placed in the "dead" file. This procedure is necessary to maintain the accuracy of the unserviceable property stock record account.
- (5) If desired, the "balance" column of the stock record card may be divided into two columns, one indicating the unserviceable matériel being processed in the shops, and the other indicating the matériel still on hand in unserviceable property storage. The latter balance is maintained by posting issue slips, on matériel sent to the shops, to the proper stock cards.

e. Storage. All items must be stored in accordance with standard warehousing procedures. Covered storage should be provided whenever possible. All items must be properly identified and located. Care must be taken that units from similar model major items are segregated according to the proper model and part number, since the latter is the only indication in some cases of technical differences.

269. PREPARATION OF WORK ORDER

a. The duplicate shipping document on unserviceable property received is posted to the unserviceable property cards by production control clerks as soon as the document is received from supply. An individual card is prepared for each different type item on hand. These unserviceable property cards are the most important single record maintained in production control since they indicate the

status of all items awaiting repair, in process, or repaired by the shops.

b. Examination of the unserviceable property cards will indicate to the shop control officer those items on hand awaiting repair or modifications by the shops. In determining the order in which these items are to be introduced to the shop, the shop control officer must take cognizance of the list of critical items given in supply bulletins and by higher headquarters. After determining this priority, he notifies the proper shop clerk to prepare a work order. The production control office must maintain close liaison with the battalion supply section when preparing work orders in order that the necessary parts for repair of the matériel to be included on the work order will be on hand in the supply section prior to issue of the work order. This may be done by forwarding a plan for production to the supply section at periodic intervals listing all unserviceable matériel it is proposed to introduce into the shops during the next period. Based on standard mortality rates, the supply section will procure and have on hand the parts required before work is begun on the matériel.

c. The following system is suggested for numbering the work orders in the depot maintenance shop:

- (1) The unit designation of the organization processing the work will appear at the top of the work order. Work orders will be numbered consecutively as they are prepared, starting with No. 1 and continuing through No. 9999, after which the series will start over with No. 1.
- (2) Each of the component shops within the base shop will be identified by a letter designation as follows:

<i>Armament rebuild shop</i>		<i>Automotive rebuild shop</i>	
Automotive shop	AV	Engine rebuild shop "A".....	ERA
Artillery shop	RT	Engine rebuild shop "B".....	ERB*
Small arms shop	SA	Power train shop.....	PT
Fire control shop.....	FC	Service shop	SV
Service shop	SV		

- (3) In cases of a production "run" of unserviceable items, it will usually be necessary to divide the total number of items being "run" into several different work orders to maintain closer control of production. In such cases the standard work order number will be followed by a numeral indicating which subwork order of the main work order is involved. For example, the 2d subwork order prepared on a "run" covered by work order No. ERA-33 would be numbered No. ERA-33-2.

d. The work order is prepared in triplicate. The original is for-

*Unnecessary when both Engine Rebuild Companies operate within the same shops.

warded to the shop foreman in the proper shop. The duplicate is forwarded to the battalion supply section as notification to ship the parts required for rebuild of the items listed on the work order. The triplicate is used to post the necessary information to the master work order register for the shop in which the work will be performed. Data from the work order is entered on the work order file (envelope) (WD AGO Form 9-80), and the work order is then filed in this envelope which is placed in the "awaiting process" section of the master work order file. A separate work order register and master work order file are maintained for each separate shop.

270. ACTION BY SHOPS

The shop foreman receives the original work order from production control, and enters the necessary data on his work order register. Using the work order as authority, the section foreman or the section receiving clerk draw the unserviceable equipment from the supply section on an issue slip. A copy of this issue slip is sent to production control as notification that the matériel has been moved into the shop. In most cases standard mortality rates will be available based on operational experience which will eliminate the necessity for the inspection of items to determine their parts requirement. In those instances where mortality rates are not available, usually in the case of major items, an inspection will be required.

a. Procedure when mortality rates are known. Production control can determine if mortality rates for parts requirements will be used. In these cases, they will have stamped the work order copy which was forwarded to supply and the supply section will procure the necessary parts. In the case of major items, such as combat vehicles, which require inspection to determine parts requirements and it is found that mortality rates can be used, the shop foreman prepares a parts requisition by stamping the following notation on the body of the form:

BASE PARTS REQUIREMENTS ON STANDARD
MORTALITY RATES. BASIS AS FOLLOWS:

Total Number of Items on W.O. _____

() Parts required for all items.

() Parts required for _____

items and resupply daily expenditures after work
is begun.

The shop foreman marks this notation to indicate whether all parts for the items are required immediately or whether parts sufficient for only a portion of the total number of items are required with the remainder issued on a daily expenditure basis. After signing the

parts requisition, the shop foreman forwards it to the shop supply section.

b. Procedure when mortality rates are unknown.

- (1) In cases where complete inspection of the matériel is necessary in order to determine the actual parts required to return the items to serviceability, the shop foreman forwards the work order to the appropriate section foreman who draws the specified unserviceable matériel from supply. Supply prepares an issue slip in duplicate and both copies are signed by the workman who receives the unserviceable matériel.
 - (a) The original issue slip is forwarded to production control where it is posted to the work order file and is then placed inside the envelope. The envelope is then moved forward in the master work order file from the "awaiting process" section to the "in process" section.
 - (b) The duplicate issue slip is filed by supply. In case a separate column is being maintained on the stock record cards to indicate unserviceable matériel still on hand in supply, the issue slip is first posted to the proper cards and is then filed.
- (2) The work order accompanies the unserviceable matériel which is moved to the inspection section. Necessary inspections are then performed and inspection forms are prepared. Upon completion of inspection, the inspector completes the "work to be performed" section of the work order, including listing modification work orders which are to be performed. With the aid of a supply clerk assigned from the shop supply section, the inspector then prepares a parts requisition (WD AGO Form 9-79) in duplicate for all parts and modification kits required to return the unserviceable matériel to serviceability. This parts requisition and the work order are then returned to the shop foreman who checks them, signs the parts requisition, and forwards the original to the shop supply section. The duplicate parts requisition remains attached to the work order. If sufficient parts to begin work on the matériel are not on hand, the inspected matériel may be moved out of the shop until the required parts are received. In certain cases technical inspection of a major item will involve a detailed disassembly. In such cases, it is impractical to move the item out of the shop during the "awaiting parts" period. In this case, the work order is returned to the item and as much work as possible is performed upon it during the "awaiting parts" period. Normally, the shop supply section will have received from the battalion supply section concurrently with issuance of the work order,

a shipment of parts based on a standard mortality rate which would allow work to be begun on the matériel.

- (3) For all parts not on hand in the shop supply section, a property issue slip is prepared and submitted to the battalion supply section. The battalion supply section issues the parts called for on the property issue slip and back-orders the parts not immediately available. The shop supply section informs the section foreman when the additional parts have been received. In all cases, a copy of the property issue slip, posted to indicate parts received, is forwarded to the production control section. When there are insufficient parts, a note to this effect is added to the property issue slip in order to inform production control as to the status of the work order.

271. ACTION BY SHOP SERVICE SUPPLY SECTION

a. The chief of the shop service supply section receives the parts requisition (WD AGO Form 9-79) forwarded from the shop foreman. This parts requisition will either contain the list of all parts and modification kits required for a definite work order or will bear a notation indicating that standard mortality rates are to be used. In cases where production control has decided that mortality rates are to be used, shop service supply section will have prepared the necessary property issue slip against the work order. Otherwise the parts requisition prepared by the foreman is used to prepare a property issue slip in quintuplicate. A separate property issue slip is made for each work order. The work order number is placed in the upper right-hand corner of the form. In general, the shop service supply room will contain a quantity of diversified items which are constantly issued from day to day. If such items are listed on the parts requisition they will be posted to the property issue slip in the "on hand" column. The items desired from the battalion supply section will be indicated in the "quantity desired" column. Copies No. 1, No. 2, and No. 3 are then forwarded to the section. Copies No. 4 and No. 5 of the property issue slip and the parts requisition are retained in the shop supply section for reference.

b. If all parts required are available in the shop supply room, the property issue slip would be initiated in 3 copies only. The original copy showing that all items required are furnished from shop service stock (by posting to the "on hand" column) would be forwarded to production control. The duplicate would be filed in the shop service supply section. The triplicate would be forwarded to the proper shop foreman together with the parts requisition as notification that the parts required are available.

272. ACTION BY BATTALION SUPPLY SECTION

Copies No. 1 and No. 2 of the property issue slip are forwarded to the storehouse after a voucher number has been assigned. Copy No. 3 is retained in the supply section office in the "hold" file. The storehouse assembles the materials requested and marks the quantity actually furnished on both copies of the property issue slip. Copy No. 1, after being signed by the shop supply representative to indicate receipt, goes back to the battalion supply section officer where it is used to make any necessary corrections to copy No. 3 and to post the stock record cards. Copy No. 2 of the property issue slip accompanies the materials to the shop service supply section. After the supply section office corrects copy No. 3 by comparing it with copy No. 1, the latter is placed in the voucher file. If certain items requested have not been filled, copy No. 3 is used to make up a back order requisition and filed in the back-order file. If all items have been filled, copy No. 3 may be destroyed.

273. ACTION UPON RECEIPT OF REQUESTED MATERIALS

a. The shop service section receives the materials from the battalion supply section together with copy No. 2 of the property issue slip. Copies No. 4 and No. 5 of the property issue slip are extracted from the file, together with the original parts requisition, and the material received is posted to these copies from copy No. 2. Copy No. 2 of the property issue slip is then forwarded to production control and may be used to indicate certain critical items which were not supplied. Copy No. 4 is filed by the shop supply section.

b. The parts requisition and copy No. 5 of the property issue slip, now showing all parts available in the shop supply section, are forwarded to the shop foreman after being stamped with the following notation :

All items indicated in the "on hand" or
"action" columns are available for issue
upon presentation of this parts requisition
to the stock room. Back-ordered items will
be issued to you automatically upon receipt.

c. Action by production control.

- (1) Production control posts the property issue slip to the work order file after which the property issue slip is placed inside this envelope as a record of the parts expended against work order.
- (2) Before filing copy No. 2 of the property issue slip in the work order file, the issue slip is checked by production control to determine whether sufficient parts have been received

for the work to commence. Notations on the property issue slip by the shop service supply section will be used as the primary guide, although the shop foreman will be contacted in cases of doubt. If a number of critical items have not been received, the job order file is moved from the "in process" section of the master work order file to the "awaiting parts" section. The receipt of these critical items will be indicated by the receipt of copies of extract property issue slips from the shop supply section. At this time the work envelope is moved back to the "in process" section.

d. Items on the property issue slip which were back-ordered by the battalion supply section will be supplied to the shop supply section on an extract property issue slip as soon as items are received. The shop supply section posts such items to copy No. 4 of the original property issue slip. Copy No. 4 of the extract property issue slip showing back-ordered items received is then forwarded to the proper shop foreman. Copy No. 2 is forwarded to production control to be filed in the proper work order file.

e. The foregoing procedure has been designed to make certain that all parts are available in the shop supply section before the work is brought into the shop for repair or rebuild. In the case of items upon which a mortality rate was used, the items themselves remain in storage until the parts required to return them to serviceability are received by shop supply. In the case of major items which are inspected to determine their specific parts requirements, an attempt is made to keep these items outside the shops until the required parts are received. In all cases, the shop foreman is fully cognizant of the status of each work order which he has received from production control. They, in turn, are aware of the status of the work order since they receive copies of the property issue slips and extract property issue slips on all parts required and also receive notifications from supply in the form of an issue slip whenever items are issued to the shops.

274. ACTION BY SHOP WHEN SUFFICIENT PARTS ARE ON HAND TO COMMENCE REBUILD OPERATIONS

The shop foreman receives the parts requisition and copy No. 5 of the property issue slip with the notation that parts indicated thereon are available for issue. If certain items have been back-ordered, the shop foreman must decide whether they are sufficiently critical to warrant awaiting their receipt before commencing the work. The shop foreman is notified of the receipt of the back-ordered items by means of copy No. 4 of the extract property issue slip which he may post to copy No. 5 of the original property issue slip. In any case, as soon as the required parts have been received, the shop foreman

so notes on his work order register and issues the work order, copy No. 5 of the original property issue slip, and any attached extract property issue slips to the individual section foreman whose mechanics are to perform the work.

a. When standard mortality rates are used, the unserviceable items will not have been removed from supply storage. Therefore, the workman to whom the work order has been assigned must first take this work order to the supply service and draw the required unserviceable items. This is generally done through the medium of an assigned receiving clerk. This clerk presents the work order to supply service and receives the specified unserviceable matériel by utilizing the same procedure outlined in paragraph 270.

b. In cases where pre-inspection of the unserviceable matériel is utilized in determining parts requirements the unserviceable equipment will be in temporary storage and immediately available.

c. In the case of major items, when the work arrives on the shop floor it will be assigned to the proper mechanic for the specific type of repair required. An operations and inspection card, prepared by the inspector, should be attached to each item indicating the sequence of operations required to return the item to serviceability. The mechanic will secure from the shop service supply room those parts or assemblies which have been previously requisitioned and ear-marked for his work order.

275. FINAL INSPECTION

The principal inspector and his assistants are directly responsible to the commanding officer. They will not make repairs or other adjustments to equipment submitted for final inspection. The inspector will return to the shop any equipment delivered as ready for final inspection which is found defective. A rejection memorandum (WD AGO Form No. 829) for defective work will be prepared in duplicate for all work rejected by the inspector. The duplicate of the rejection memorandum will be forwarded immediately to the shop foreman who reviews it and takes any necessary action. It is then forwarded to the production control section where it becomes part of the work order file on the work order maintained by this section and brought to the attention of the commanding officer. The original rejection memorandum is attached to the work order which is returned to the proper section repairman with the defective equipment. After corrections have been made the equipment, together with the rejection memorandum and the work order, is returned to the final inspector. If the equipment is found to be satisfactory, the work order and the rejection memorandum are both signed by the final inspector and forwarded to the shop foreman. The signed rejection memorandum is forwarded to production control where it replaces the duplicate copy in the work

order file. Report of final inspection will be noted on the work order form. The equipment is moved to the shipping section to await disposition instructions.

276. ACTION UPON COMPLETED WORK ORDER

a. The shop foreman enters the data from the completed work order to his work order register. The signed work order is then forwarded to the shop supply section.

b. Upon receipt of the signed work order by the shop supply section, a property turn-in slip (WD AGO Form No. 447) is prepared in quadruplicate listing all items ready for shipment to the battalion supply section. The work order number is placed in the upper right-hand corner of the turn-in slip. All four copies of the turn-in slip and the rebuilt matériel are taken to the battalion supply section. The battalion supply section receiving clerk signs all four copies of the turn-in slip and the receipt section of the work order. Copy No. 1 is used to post the serviceable stock record cards in the battalion supply section office. Copies No. 2, No. 3, and No. 4 are returned to shop supply. Copy No. 2 is forwarded with the completed work order to production control. Copy No. 3 is used to post to the unserviceable property stock record cards. The issue slip which originally covered the issue of the matériel from supply to the shop is then extracted from the special file and the property turn-in slip is posted to this issue slip. The property turn-in slip is then filed in the voucher file, Copy No. 4 of the property turn-in is filed in shop supply with all other vouchers pertaining to the same work order and enables shop supply to compute the true mortality rate of parts expended against this work order.

c. Data from the original copy of the work order is posted to the master work order register in production control and to the work order file. The original work order is then placed in the envelope replacing copy No. 3, which is destroyed. The work order file is then moved from the "in-process" section to the "completed" section of the master tub file.

d. As soon as possible, the shop clerks in production control post information from the completed work order to the proper unserviceable property cards and the "recapitulation of work orders" cards (par. 280). The man hours required to complete the work are computed and posted to the original work order, the work order file, and the proper "recapitulation of work orders" card. After all necessary data has been posted to these forms and the master work order register, the shop clerk signs the original work order and the work order file is moved from the "completed" section of the master tub file to the "dead" section.

277. TRANSFER MEMORANDUM PROCEDURE

When assemblies or parts are removed and separated from the major items or assemblies and routed to other shops for repair, a transfer memorandum (WD AGO Form No. 10-155) must be prepared in triplicate.

a. *Assignment of Voucher Number.* The transfer memorandum has the same number as the work order to which it applies. This number will appear in the upper right-hand corner and will be followed by an appropriate suffix indicating the shop to which the item is sent. No suffix will be used when transfer is made between sections of the same shop.

b. *Usage.* The transfer memorandum will be used when a part or assembly is being separated from the major items and sent to another shop or section of the same shop for work. A separate transfer memorandum will be made out for each part or assembly forwarded to another shop or section, and a tag bearing the same number as shown on the transfer memorandum will be attached to the part or assembly for identification purposes.

c. *Routing.* All three copies of the transfer memorandum are signed by the shop foreman after which copy No. 1 is forwarded with the part or assembly to the shop or shop section to which the parts or component is transferred. Copy No. 2 of the transfer memorandum is attached to the work order. Copy No. 3 is forwarded to the production control section where it is posted to the master work order register maintained for the shop to which the part or component was transferred. The data on the transfer memorandum is then entered on the work order file of the basic work order and inserted in the envelope.

d. *Action by shops.* When the shop or section that is to do the work receives the part or assembly, the transfer memorandum is posted to the shop work order register. Upon completion of the work, the transfer memorandum with the repaired item is forwarded to the final inspector who signs the transfer memorandum if the work is satisfactory. The completion data is then noted on the shop work order register and the repaired part, together with the signed transfer memorandum is returned to the original shop section. Upon receipt of the item the original shop section removes the No. 2 copy of the transfer memorandum from the basic work order and destroys it, forwarding copy No. 1 to the production control section. The production control section notes the completion data on the master work order register maintained for the shop to which the part or component was transferred. It is then posted to the work order file of the basic work order and replaces copy No. 3 which is originally filed in this envelope.

278. EXCESS AND SCRAP PROPERTY TURN-IN PROCEDURE

a. Excess.

- (1) *Action by shop supply section.* Upon the completion of each work order, all procured parts which were not actually expended are returned to the shop supply section. Excess matériel may also accrue through stripping major assemblies to be salvaged of recoverable sub-assemblies. In such cases, the shop supply section prepares in triplicate a property turn-in slip listing all such excess matériel and placing the work order number in the upper right-hand corner. All three copies are then forwarded with the excess matériel to the battalion supply section.
- (2) *Action by battalion supply section.* The supply section assigns a voucher number to all three copies of the property turn-in slip. Copy No. 2 is forwarded to the storehouse with the excess matériel, while copy No. 1 is posted to the stock record cards and filed in the "hold" file with copy No. 3. The storehouse marks the quantities actually received on copy No. 2 and returns this copy to the supply section office. The supply section office then extracts copies No. 1 and No. 3 from the "hold" file, makes any necessary corrections to these copies, and signs all three copies. Copy No. 1 is filed in the voucher file, copy No. 2 is forwarded to the shop supply section for their file on this work order, and copy No. 3 is forwarded to production control to be placed in the proper work order file.

b. Scrap Property Turn-In Procedure.

- (1) *Action by shop.* All scrap property which accumulates in the shop during repair operations against a definite work order is placed in a portion of the shop set aside for such property. Each item must be tagged with a rejection tag which indicates the work order to which it applies, and the reasons for its rejection.
- (2) *Action by shop supply.* Periodically, the shop supply section will prepare a property turn-in slip, in triplicate, covering all property which has accumulated in each shop scrap section. A separate property turn-in slip will be prepared for each different work order represented. The work order number will be placed in the upper right-hand corner of the property turn-in slip. A certificate of salvage is signed by the technical inspector and the scrap matériel is moved to the appropriate scrap dump. The salvage officer signs all copies of the property turn-in slip and returns copies No. 2 and No. 3 to the supply section. Copy No. 2 is assigned

SHOP SECTION SUMMARY OF DAILY PRODUCTION
ORDNANCE DEPOT MAINTENANCE SHOP

SECTION _____ DATE _____

ITEM	UNITS COMPLETED THIS DATE	WORK ORDER NUMBER	MAN HRS	UNITS IN PROCESS

PERSONNEL ASSIGNED _____

PERSONNEL PRESENT _____

SECTION CHIEF _____ OIC _____

Figure 13a. Shop section summary of daily production (obverse side)

SUMMARY OF MAN HOURS

PERSONNEL ASSIGNED	PERSONNEL PRESENT	PRODUCTIVE MAN HOURS	ADMIN MAN HRS	OTHER MAN HRS	TOTAL
		(1)		(2)	

(1) MUST BE ACCOUNTED FOR ON OBERSE SIDE.

(2) EXPLAIN BELOW:

Figure 13b. Shop section summary of daily production (reverse side).

a voucher number and posted to the unserviceable stock record cards. The issue slip which covered the issue of the matériel from supply to the shop is extracted from the special file and the property turn-in slip is posted to this issue slip. The property turn-in slip is then filed in the voucher file. Copy No. 3 is forwarded to production control to be placed to the work order file and then placed inside this envelope.

279. REPORTS SUBMITTED ON SHOP PRODUCTION

a. *Shop Section Summary of Daily Production.* This summary (fig. 13a and 13b) is submitted daily by each section or department leader in the shops. The summary is forwarded to the shop headquarters where it is reviewed and forwarded to production control. The production control section reviews the daily production activity summaries from the sections and posts information as to man-hours expended against each work order to the proper work order file. In many cases, work will be performed in different shops on various parts of the same work order. Production control must consolidate the various reports against each work order before posting. The daily production activity summaries are also utilized to supply the information which is placed on the daily battalion shop production summaries and the group labor record.

b. *Daily Summary of Battalion Shop Production* (fig. 14). On this form may be listed all of the items produced by the depot maintenance shop. This report is prepared in sufficient quantities to forward one copy to the next higher headquarters, to file a copy in production control, and to forward a copy to the appropriate shops. It is the most important report provided the planning and control officer, since it indicates either directly or indirectly the efficiency and productivity of every section of the shop.

c. *Group Labor Record* (fig. 12). On this form is listed all personnel of the sections or departments from whom daily production activity reports are received. See paragraph 256 for a discussion of this form. A summary is made in percentage form indicating the division of consolidated battalion man-hours. This report is prepared in sufficient quantities to forward one copy to the next higher headquarters, to file a copy in production control, and to forward a copy to the appropriate shops.

d. *Consolidation of Parts Used.* Periodically, as required by higher headquarters, a report must be made of parts consumed in battalion shops. WD AGO Form No. 866 is prepared in triplicate from the stock record cards by the battalion supply section, and copies No. 1 and No. 2 are forwarded to production control. After

[illegible]

Figure 14. Daily summary of battalion shop production

review by the battalion maintenance officer, copy No. 2 is filed in production control and copy No. 1 is forwarded to higher headquarters.

280. RECORDS ON SHOP PRODUCTION

a. *Unserviceable Property Cards* (fig. 15). These cards are the basic record maintained by production control. They indicate the status of all unserviceable matériel awaiting repair, in process, or completed to date. A separate card is prepared for each different unserviceable item received in supply. The card covers four principal changes in status: (1) received by supply, (2) shipped from supply, (3) work delayed, and (4) final disposition. These four changes in status affect three balances shown on the card: (1) balance in storage, (2) balance in process, and (3) total on hand. The "total on hand" is always the sum of all items, whether in supply, in the shops, or awaiting parts.

b. *Work Order Register*. A separate work order register (WD AGO Form 9-77) is maintained in production control for each shop. As each work order is prepared, it is posted to this work order register and the date is placed in the "date order issued" column. If desired, the "date order promised" heading may be changed to "date parts received." This column would be posted when the property issue slip pertaining to this work was received by production control, indicating that the required parts had been delivered to the proper shop supply section. The "date order finished" column is posted when the completed work order is received by production control. In addition to the master work order register, individual work order registers are maintained by each shop foreman for those work orders being processed through his shop.

c. *Master Work Order Tub File*. The master work order tub file is divided into five separate sections.

- (1) Awaiting process.
- (2) Awaiting parts.
- (3) In process.
- (4) Completed.
- (5) Dead file.

Each work order and all the papers which pertain to it are placed in a work order file (WD AGO Form 9-80). The front of this envelope contains all pertinent data on the progress of the work order in a convenient form. Each work order file is kept in the proper section to show its status in the shop.

d. *Recapitulation of Work Order File*. The "recapitulation of work orders" card is prepared for each item undergoing repair in the battalion shops. Upon completion of the work order, the following data is posted to this card:

NOMENCLATURE _____
 CODE _____
 PART NUMBER _____

Figure 15. Unserviceable property card.

- (1) Work order number.
- (2) Date completed.
- (3) Number of units rebuilt on work order.
- (4) Total man-hours expended against work order.
- (5) Man-hours expended per unit rebuilt.

This card is designed for a visible index file which provides the battalion maintenance officer with data on the quantities of ordnance matériel processed through the shops to date and the man-hours required to rebuild each unit.

e. Miscellaneous Records.

- (1) *Modification data cards.* Special cards should be prepared listing pertinent data on each modification work order received.
- (2) *Publication data cards.* Cards may be prepared listing all Departments of the Army publications which pertain to each separate item of matériel. These cards provide a convenient way in which all technical bulletins, technical manuals, modification work orders, maintenance letters, etc., may be tabulated so that all of the information which pertains to any one item of ordnance matériel is listed in one place. Shop personnel should refer to these cards as an index to the latest information on the repair of unserviceable matériel being processed by the shops.

Section IV. SUPPLY ADMINISTRATION

281. GENERAL

For purposes of control, depot maintenance shop supply (battalion supply) is divided into two principal sections:

a. Serviceable supplies section, which is responsible for the procurement, storage, maintenance of records, and issues of all parts, supplies, tools, and equipment utilized by the shops.

b. The unserviceable supplies section, which is responsible for the receipt, storage, issue, and the maintenance of records of all unserviceable matériel until it is returned to a serviceable condition or disposed of otherwise.

282. SHOP SERVICE SUPPLY SECTIONS.

a. General. The parts and supplies utilized in the various shops are requisitioned, stocked, and issued by the company shop service supply sections. These supply sections operate within the shop assigned to their company. They are under the control of the supply officer of the company, who is responsible to the battalion supply officer for the initiation and use of the prescribed supply procedures.

b. *Storage of Parts.* The procurement of parts for the shop is accomplished by the preparation of a property issue slip based on parts requisitions received from the shop. A separate property issue slip is prepared for each work order in the manner explained in section III, "Shop Operating Procedures". When the item listed on each property issue slip are received in shop service supply, they may be handled in one of three ways:

- (1) Binned in the shop supply room,
- (2) Binned in the shop,
- (3) Issued direct to the workman.

In general, the number of items will determine which method will be employed. If the work order called for rebuilding only one or two items, all parts will be issued direct to the workman. Work orders requiring large quantities of supplies may be handled in one of the other two ways.

c. *Procurement of Parts.*

- (1) *Parts requisition.* A parts requisition is received by shop supply listing all items required to rebuild unserviceable matériel which has been inspected prior to being introduced into the shop. These items are then listed on a property issue slip which is forwarded to the battalion supply section for necessary action.
- (2) *Mortality rates.* In general, as discussed heretofore, unserviceable unit assemblies and subassemblies will not be inspected before being introduced into the shops. Procurement of parts is initiated by the production control section or the shop foreman who forwards a parts requisition to the shop supply section with the notation that standard mortality rates are to be used as a basis for requisitioning the parts. The shop supply section must have on file mortality lists for such unit assemblies and subassemblies.
- (3) *Shop service stock.* A supply of fast moving items, standard hardware, and cleaning and preserving materials utilized by the shops should be maintained in the shop supply room. Such items are listed on a property issue slip which is processed in the normal manner with the exception that no copy is forwarded to production control, since no individual work order is involved. A special shop voucher number should replace the usual work order number which is placed in the upper right-hand corner of the property issue slip.

283. BATTALION SUPPLY SECTION OPERATIONS

a. *Determination of Initial Stockage.* The amount of stock carried by a battalion supply section is dependent upon the replenishment period and the proximity of the depot from which supplies are

received. Determination of the initial stockage for this section depends upon two basic factors:

- (1) The quantity of each different type of unit assembly which will be rebuilt during the normal thirty day period; and
- (2) The mortality rate of each component part, i.e., the quantity of each component part of each type of assembly required for rebuilding one hundred unit assemblies. It is the responsibility of the battalion planning and control officer to furnish the battalion supply section with estimated production figures.

b. Procedure on Back Orders. When all items requested by the shop supply section cannot be furnished by the battalion supply section, the stock record clerk posts all unfurnished amounts of matériel to the proper stock record cards in the "Due Out" column. Colored celluloid markers are attached to the stock record cards to indicate such "dues out." Whenever the total "dues out" subtracted from the sum of the existing stock balance and the "dues in" is less than the prescribed safety level (re-order point), a celluloid marker should be attached to the stock record cards. This means that the items must be listed on the next stock replenishment request prepared. When the back-ordered matériel is received, the appropriate entries will be posted to the stock record cards from copy No. 3 of the shipping document. As this document is being posted, all items "due out" and their voucher numbers will be marked on copy No. 3 of the shipping document and the colored celluloid markers will be removed when the "dues out" are completed. Copy No. 3 of the shipping document is then forwarded to the requisition section. Copy No. 3 of the property issue slip is extracted from the back-order file and all items received are posted to it. An extract property issue slip is then prepared in four copies listing back-ordered parts which were received, using the same voucher number as the original property issue slip and indicating each consecutive extract property issue slip by adding a, b, c, etc., to the voucher number. Copy No. 3 is placed in the "hold" file and copies No. 1, No. 2, and No. 4 are forwarded to the storehouse. The required matériel is then issued to the proper shop supply section together with copies No. 2 and No. 4. Copy No. 1, signed by the shop supply representative, is returned to the battalion supply office for processing. If the extract property issue slip contains all items required to complete the original property issue slip, all copies are stamped "shipment completed" and the voucher register is stamped "completed". The shop supply section posts items on the extract property issue slip to copy No. 4 of the original property issue slip. Copy No. 2 is then forwarded to production control and copy No. 4, together with parts, is given to the proper repairman.

CHAPTER 13

SUPPLY DEPOTS

Section I. GENERAL

284. GENERAL

Ordnance general supply depots are operated by ordnance units sometimes assisted by civilian labor and operate under the supervision of ordnance battalion or group headquarters. The basic ordnance units in general supply are the Ordnance Depot Company (Army), T/O&E 9-57 and the Ordnance Supply Depot Company (Communications Zone), T/O&E 9-367. The responsibility for administration and operation of the depot is charged to the depot commander.

285. DEPOT COMMANDER

Some of the major responsibilities of the depot commander are as follows:

- a.* Planning and supervision.
- b.* Administration of the depot.
- c.* Efficient technical operation.
- d.* Training of personnel.
- e.* Supervision of storage, care, maintenance, and issue of stocks.
- f.* Supervision of the loading and unloading of depot supplies.
- g.* Liaison with transportation agencies on shipments.
- h.* Supervision of packing and marking of all shipments.
- i.* Security of the depot.

286. PERSONNEL

Each individual should be thoroughly trained in all technical operations to which he may be assigned. To attain a flexible organization readily adaptable to the varying demands made upon the depot, every man must be cross trained to perform essential duties other than those normally assigned to him. It is advisable for two or more men to be trained for each key position.

Section II. DEPOT LAY-OUT

287. IMPORTANCE

Upon receiving his mission, the depot commander immediately plans the depot lay-out. Probably no other single phase of depot operations will so completely govern the success or failure of the

depot. The ideal depot lay-out minimizes the number of times that matériel must be handled, provides for an uninterrupted flow of work through all divisions, promotes easy traffic regulations, and provides for expansion or contraction of the depot without loss of efficiency.

288. DEPOT SITE

a. An ideal depot site is seldom encountered, but the following are minimum prerequisites which must be available or capable of being provided:

- (1) External routes of communications, either rail or improved roads, but preferably both.
- (2) Internal rail spurs and loading platforms, but at least internal roads capable of being improved so as to support heavy traffic.
- (3) Adequate storage areas to accommodate the depot stock and to permit expansion.
- (4) Hard standing and adequate drainage.
- (5) Cover and concealment commensurate with the tactical situation.
- (6) Shelter for critical items of supply.
- (7) Adequate shelters or bivouac area for personnel.

b. All other things considered, the use of existing buildings is generally desirable because an inhabited area will possess most of the features required of a depot site, and because new construction should be minimized. Very successful depots have been established in such buildings as race tracks, fairgrounds, military barracks, markets, warehouses, and in small villages and large estates.

289. LAY-OUT DIAGRAM

A space allotment plan is prepared as the first step to advise subordinates of the areas and facilities allocated to them. Traffic routing is indicated on this plan, together with areas reserved for expansion. Subordinates are required to complete the plan for their areas and to submit them for approval or revision. Upon approval, the lay-out is implemented by signs and markers before any attempt is made to occupy the area. Basic policies governing storage, maintenance, supply, and salvage are contained in Department of Army TM's, FM's, AR's, and SR's. Special instructions governing the storage, maintenance, and salvage of ordnance general supplies are covered in the 9 series of supply bulletins.

290. EXPEDIENTS

Frequently a depot must receive supplies before such refinements as bins and shelves become available. Confusion has been avoided in the

past placing a line of stakes in the ground, each bearing the designation of an ordnance SNL group or a manufacturer's name. As boxes are received they are examined and placed behind the appropriate stake. It is then possible to obtain a needed part or assembly by making a visual inspection of the line of boxes pertaining to a single ordnance SNL group or manufacturer and concentrating on those of appropriate size. The subsequent arrangement of stock can be controlled so that groups of prime importance are handled in a high priority. A depot that attempts to receive stock without arrangements for segregating the various groups received during overload periods may fail to achieve success because the pressure to meet the issue demand for certain groups of supply will mount to the point where an inordinate amount of time and labor is expended in searching through the unsegregated stock for important items.

Section III. DEPOT ORGANIZATION

291. GENERAL

a. SR 780-5-1 establishes the principles of organization of a fixed type depot from a bulk allotment of personnel, and should be followed in a theater of operations insofar as it is applicable to local conditions and to the utilization of ordnance units reinforced by labor available in the locality. Ordnance units in a theater of operations possess the organic means for administration, housekeeping, and security. Ordnance command units are organized on military lines and must be adapted to suit the functional needs of the depot without undue demand for augmentation from the attached units.

b. The depot must be prepared to operate on a 24-hour basis. Reliefs must be organized and assigned so that fluctuations in the work-load can be accommodated as required without creating bottlenecks, impeding operations, and causing excessive fatigue and lowered morale. Key specialists, both enlisted and officer, must be distributed in the functional organization so that their training and influence can permeate the entire organization.

c. The organization of the depot normally includes the following divisions consisting of branches as shown:

(1) *Depot office.*

- (a) Administrative branch.
- (b) Mail and record branch.
- (c) Service branch.

(2) *Stock control division.*

- (a) Stock record branch.
- (b) Requisition branch.
- (c) Inventory branch.

- (3) *Storage division.*
 - (a) Receiving branch.
 - (b) Shipping branch.
 - (c) Storage branch.

292. ADMINISTRATIVE BRANCH

The administrative branch of the depot office consists of the depot commander, executive officer, administrative officer, and other administrative personnel and is the control office for all depot operations. The administrative branch is responsible for supervision of administration of both the military and technical organization of the depot. The duties of this office are those delegated by the depot commander.

293. MAIL AND RECORD BRANCH

This branch of the depot office receives, records, and distributes all depot mail. Its operations include—

- a. Opening and time-stamping official mail.
- b. Routing and distributing all incoming mail.
- c. Dispatching outgoing mail.
- d. Providing an intradepot messenger service.
- e. Indexing, recording, and filing correspondence.

294. SERVICE BRANCH

This branch of the depot office is a pool composed of matériels handling personnel, carpenters, painters, and drivers. Its function is to furnish any service or labor required by other branches of the depot, to assist the receiving and shipping branches in unloading and loading trucks and railroad cars, to make and install signs and road markers, and to assist the storage branch in storing and issuing large shipments.

295. STOCK RECORD BRANCH

a. This branch of the stock control division maintains a stock record card for each item stored and issued by the depot. This function includes—

- (1) Checking incoming shipping documents and posting verified receipts to stock record cards.
- (2) Posting issues to stock record cards.
- (3) Posting dues-in to stock record cards from outgoing requisitions or information copies of shipping documents.
- (4) Posting dues-out to stock record cards from incoming requisitions which are not completely filled.

b. Prepares status of stock reports and special reports required by higher headquarters.

c. Sets up signals on the stock record cards to show the requisition branch which items have dropped below the stockage objective.

d. Makes all necessary computations of stockage objectives (control levels) and safety levels (re-order points).

e. Prepares all back-order releases.

f. Maintains interchangeability data and checks items requisitioned against this data before placing them on back-order.

296. REQUISITION BRANCH

a. This branch of the stock control division receives and registers all incoming requisitions and shipping orders.

b. It prepares issue slips or extracts of shipping orders, by storage sections, when the requisition or shipping order includes items stored by more than one section and there are not enough copies to go around.

c. It edits incoming requisitions for correctness of nomenclature, stock number, and quantities.

d. It prepares and registers all replenishment requisitions.

e. It conducts systematic follow-up of the depots replenishment requisitions.

297. INVENTORY BRANCH

a. This branch of the stock control division is responsible for establishing a schedule for inventories in collaboration with the storage division. Collaborates with the storage division in conducting the inventories, reconciling physical count to stock record account and preparing inventory adjustment reports.

b. Initiates spot inventories when zero balances appear in the stock records.

c. Initiates and prepares reports of survey.

d. Maintains inventory and stock record adjustment voucher register.

e. Coordinates use of proper stock numbers and nomenclature with other branches of the depot.

f. Provides assistance to the storage division in the identification of items.

298. RECEIVING BRANCH

The receiving branch of the storage division is responsible for all receipts. This includes—

a. Arranging for the spotting and supervising the unloading of railroad cars and trucks.

- b. Checking all incoming receipts by package.
- c. Processing acknowledgments of receipts if required.
- d. Furnishing copies of shipping documents for each storage section to which incoming items are assigned.
- e. Arranging with the service branch for delivery of packages to the proper storage section.
- f. Keeping records of all receipts.

299. SHIPPING BRANCH

This branch of the storage division handles all outgoing shipments. Items picked by the storage branch and forwarded to the shipping branch for shipment are checked against the accompanying copies of requisitions or shipping documents. The branch then insures that all items are properly packed and marked. The number of the box or package in which each item has been packed is indicated on the copy of the issue slip, requisition, or shipping document. This branch makes the arrangements for and checks the loading of each shipment.

300. STORAGE BRANCH

a. This branch of the storage division is responsible for storage of all parts, assemblies, and subassemblies together with major items other than vehicles and towed artillery.

b. The storage branch is divided into sections and the sections into stores units. The number of sections and stores units will depend upon the functions to be performed, the number of items and the quantities of each to be stored, the number and kind of buildings, and the layout of the depot. In general, items should be assigned to sections and stores units by SNL groups (A, B, C, etc.) and subgroups (A-5, A-6, etc.). Functions of the storage branch include—

- (1) Establishment, execution, and review of the locator system.
- (2) Preparation and maintenance of locator cards.
- (3) Receiving supplies and checking contents of packages except those to be placed in bulk storage, which can be identified by packing lists or markings.
- (4) Checking receipts against shipping documents.
- (5) Placing items in storage spaces in accordance with the locator system and approved storage methods.
- (6) In-storage care and preservation of matériel.
- (7) Picking items to be issued or shipped from stock and delivering them to the shipping section.

c. The storage branch maintains a depot strong room for storage of small, valuable items which require extraordinary safeguarding, such as pistols and instruments, and is the direct responsibility of

the chief of the storage branch. The strong room should be kept locked except when items are actually being stored or issued. Keys should be in the custody of the depot commander, the branch chief, and designated assistants.

Section IV. RECEIPTS

301. GENERAL

Receiving operations must include identification and quantity of matériel received. The receiving personnel must further route this matériel to the appropriate storage area and all information pertaining to the identification, quantity, and location, must be submitted to the stock record branch for posting without delay. Mistakes in identification or location of matériel may result in issue of incorrect items or even failure to issue items which actually are on hand but are incorrectly identified.

302. ADVANCE SHIPPING INFORMATION

a. Purpose. To alert interested agencies, advance notices of incoming shipments are forwarded to the stock record branch, storage branch, and to the chief of the receiving branch. In this way, the receiving branch chief can determine the type and quantities of matériel to be received and arrange for men and equipment to handle unloading and checking. The stores unit chief determines the labor and equipment needed to check, inspect, and place the matériel in storage and makes advance plans for the location of each item.

b. Types of Advance Notices. Advance notices of incoming shipments may be received as copies of shipping documents, information copies of shipping orders, or merely a reference to the depot's requisition.

- (1) The shipping document identifies the shipment and method of shipping it so that the receiving depot can obtain from transportation officers advance information concerning the time of arrival. It describes the matériel in detail giving nomenclature, stock and part numbers, and quantities; and also lists the types of packages and the number, weight, cubage, and contents of each. This enables the receiving branch to determine the labor and equipment required to handle the shipment, as well as items and quantities to be distributed to each storage section or unit.
- (2) Copies of shipping orders and requisitions are less informative than shipping documents because they do not indicate packaging. Moreover, in the case of requisitions, the supplying agency may not have been able to fill the order

completely and may be sending one or more partial shipments.

c. *Files.* A file of documents bearing advance information of each shipment is kept in the receiving branch until the shipment is received.

303. UNLOADING AND CHECKING

a. The chief of the receiving branch arranges with the rail transportation office to have railroad cars spotted at the proper depot siding, and trucks bringing incoming shipments are routed to appropriate unloading docks by the receiving branch.

b. The receiving branch assigns checkers and arranges for labor crews for each railroad car or truck. Normally, shipping documents will be used to check matériel received. In cases where the shipping document is missing, locally reproduced shipping documents will be prepared for each car or truck and assigned a depot voucher number in series with cross-reference made to the shipper and the shipper's number. All information identifying the shipment is entered on each shipping document to include—

(1) Consignor.

(2) Number assigned to the shipping document by the consignor.

(3) Shipping papers if any.

(4) Depot's requisition or shipping order issued by higher authority which initiated the shipment.

(5) Any code marking which designates the equipment.

c. As the car or truck is unloaded, the checker enters the number and type of each package on the shipping document. Unpackaged items, such as tank-track sections, are recorded by description and quantity. The checker also indicates the storage section or unit to which any one package or unpackaged item is to be delivered. Items are segregated according to storage sections or units on the unloading dock and later delivered to them.

d. The receiving branch prepares a copy of the shipping document for each storage section to which part of the new shipment is consigned. All shipping documents pertaining to a particular shipment are given the depot voucher number for that shipment with the designation of the storage section prefixed or suffixed. All extracts of shipping documents are noted on the corresponding shipping document. When a single storage section will handle the entire contents of a car or truck, a copy of the shipping document accompanies the matériel.

304. ACTION BY STORAGE SECTION

a. The storage section checks all shipping documents, listing the items and quantities received. A packing list which accompanies

the shipment may be used for checking and any discrepancies may be noted thereon. Each packing list is given the same number as the shipping document covering the same matériel. If the contents of a package are identified as to nomenclature and quantity by the markings or by packing lists, and if the package is to be placed in bulk storage, its contents are checked in at the quantity on the packing list or outside markings. When no packing list accompanies the shipment, all packages are opened and their contents inspected and checked by physical count.

b. As items are checked in, they are placed in the proper storage spaces. If any item is placed in a new location, the new location is immediately entered on the locator card for that item. To preserve identification, the nomenclature and stock number are placed on envelopes containing small items, and all other items are tagged.

c. The storage section indicates on the shipping document all packages and unpacked items which it receives. Shipping documents are then sent to the receiving branch which checks them to make sure that all packages or unpacked items have reached the proper storage section. The shipping document is then sent to the stock record branch for posting to the stock record cards.

305. AT THE STOCK RECORD BRANCH

Every entry on the shipping document is posted to the pertinent stock record card. If an original packing list is used and there is a discrepancy between the quantity called for by the packing list and the quantity received by the storage section, the quantity on the packing list is dropped from the dues-in. If the shipping document was prepared locally, the quantity actually received is dropped from dues-in. Differences between quantities received and those supposedly shipped will be adjusted on notice from the requisition branch after a check has been made by the inventory personnel. In all cases, the quantity actually received is so posted and added to balances on hand. As each item is posted, that fact is indicated by an "X" or a check mark on the shipping document. When all items have been posted, the stock clerk marks the shipping document "Posted" followed by his initials and the date. These are precautions against double posting. The shipping document is then forwarded to the requisition section.

306. AT THE REQUISITION BRANCH

The requisition branch checks the shipping document and posts to the depot's requisition. Shipping documents, packing lists, and similar documents are filed with and/or cross-referenced to the requisition to which they pertain. If there are any discrepancies between the quantities received and those listed by the shipping document, the

shipping document is forwarded to the receiving officer to be acted upon before filing.

Section V. STORAGE AND PRESERVATION

307. GENERAL

Storage is not a separate operation. It is a continuation of receiving and a preparation for issuing. Supplies which are correctly stored can be issued safely and speedily and shipped in serviceable condition.

308. STORAGE PLAN

Each storage unit chief is responsible for developing and executing a plan for storing items assigned to his unit. This plan must be in accord with policies established by the depot commander and the space assigned to the storage unit. The storage plan must provide for storing supplies by space, rather than by numerical sequence. Storage space is of two types—covered and open. Covered storage is further divided into bulk and bin storage.

a. Type of Storage. The first step in making a storage plan is to determine which of the items can be placed in open storage. The type of storage chosen for a particular item depends on how much protection it requires from the elements. The chief of the storage unit must bear in mind when covered space is exhausted, new receipts must be stored in the open regardless of their nature unless there is time, labor, and equipment to rehandle items which could have been originally stored in the open.

b. Bulk and Bin Storage. Certain items are always placed in bins because of their size and nature, type of packaging, or small quantity. Others are always placed in bulk storage on the basis of size alone. Many items are placed in bulk as well as bin storage. Large issues of such items are made from bulk storage while small issues are made from binned stock. The storage unit chief must determine how much each item will be affected by the retail and wholesale operations of the depot.

309. LOCATION

a. Binned Stock. Bins may be grouped by SNL sub-groups, combinations of SNL subgroups, or entire storage units, depending upon available storage space and the physical lay-out of the depot. All items are stored according to their physical characteristics rather than stock numbers. A locator system is employed to locate each item quickly.

b. Bulk Storage. The location of items placed in bulk storage is determined by—

- (1) *Cubic space required.* Space required is governed by the size of the package and the quantity to be stored.
- (2) *Area or floor space required.* The package's weight, type, and ability to withstand weight; the ease or difficulty with which the package can be handled by available equipment; and the allowable floor load determine the height to which items may be stacked.
- (3) *Activity of the item.* In general, active items should be located near the shipping point.
- (4) *Difficulty in handling.* Large or unusually heavy containers which are hard to handle should be located near shipping doors. Items which are easily handled may be placed on decks built over bin racks or stacks of other items.
- (5) *Nature of the item.* Storage problems presented by particular items are discussed below.

c. Items of Same SNL Subgroup. As far as possible, items of the same SNL subgroup should be stored together. This makes stock picking easier because requisitions and shipping orders list the items in each SNL subgroup together.

310. LAY-OUT OF STORAGE UNIT AREA

(TM 38-402)

a. The storage layout must conform to the structural features of the warehouse, such as location of doors, platforms, posts, windows, and ceiling height at each point.

b. Each area should be marked with the allowable floor load in pounds per square foot. The marking must be visible after the area is filled. See FM 5-35 for data concerning floor loads.

c. Light, bulky items are stored in central sections where ceilings permit matériel to be stacked high, while big, heavy items are placed near platforms and doors. Small, easily-handled containers and inactive supplies are located in more remote parts of the storage area.

d. Aisles must be well planned. Transportation aisles should run the full length and breadth of the warehouse and be wide enough to allow depot conveyances to pass each other as well as provide maneuvering space for fork lift trucks and personnel.

e. To reduce aisle space to a minimum, matériel requiring the same aisle width for handling should be placed along the same aisle. Place matériel requiring the greatest aisle width for handling along main aisles running to and from clearing spaces, doors, and platforms.

f. Like items should be stacked together.

g. Clearing spaces and aisles should be marked plainly by painting or other suitable marking on the floor. No form of floor marking should endanger personnel or be an obstacle to equipment by projecting above the floor surface.

311. OPEN STORAGE

a. The lay-out of open storage areas is similar to that of bulk storage within warehouses. Hauling distances from unloading points to storage point should be kept to a minimum. Heavy items requiring crane handling should be near unloading points. Roadways and access aisles should be laid out in straight lines and kept clear.

b. Protect supplies subject to weather damage by tents, tarpaulins, or building paper. Place all stacks on adequate dunnage.

312. LOCATOR SYSTEM

a. Each storage unit maintains a locator system based on separating, in a logical sequence, the assigned storage space. Each covered bulk storage area and open storage area is divided into blocks. Each area and block is designated by a number or letter. Bins are designated by storage area, row, tier, and bin number.

b. Each item is assigned one or more definite locations which are recorded on a locator card prepared for each item.

313. STORAGE

a. Always store from the wall or imaginary wall line toward the aisle. If a storage space is bounded on all four sides by aisles, store from the center of the space outward to the aisles. To fill any space, start each row from the wall or imaginary center line, completing each row to the aisle before starting the next.

b. The storage area is not considered solely in terms of square feet of floor space. Space begins at the floor and extends upward. Height of stacks should be limited only by the quantity of supplies, allowable floor load, physical characteristics of supplies, strength of containers, stacking ability of men and equipment, and requirements for clear space between the top of the stack and the warehouse ceiling. Special provision should be made for items that may be damaged by heat near the roof of the building.

c. Packages with defective wrappings should be stored last so that they may be issued first. Matériel must be rewrapped where necessary.

d. Containers are normally placed with one end toward the aisle from which they will be withdrawn. Exception to this rule is made only if space will be conserved by different placement, or if both ends must be available for handling. Containers are more easily reached and moved if cross-piling is avoided, except where necessary for stability.

e. Stacks may be cubical or pyramidal. Cubical stacks are better because they are more uniform, facilitate mechanical handling, take up less space, and are easier to inventory. Pyramidal stacks are

useful for stacking cylindrical articles without bracing and, when covered, give better protection from weather.

f. Wherever possible items should be placed on pallets or dunnage. Stacks which need free circulation of air are built up with dunnage between layers. Stacks which will be damaged by sunlight and moisture should be located away from windows, doorways, and other openings.

g. In general, only one kind of item should be placed in a single bin. When several items share the same bin, they should be separated by partitions.

314. MATERIALS HANDLING EQUIPMENT

Make full use of handling aids and mechanical equipment. See TM 38-402 for a discussion of pallets, roller conveyors, fork-lift trucks, cranes, tractors, and other mechanical equipment.

315. CARE AND PRESERVATION OF SUPPLIES IN STORAGE

One of the objectives of the supply mission is to issue matériel in serviceable condition. To accomplish this, matériel in storage must be given adequate care and preservation. This includes the maneuvering, exercising, operating, testing, and special inspections required for proper preservation of the matériel. The effectiveness of the procedure followed must be checked by inspections. Rearrangements in storage and the application of paints, oil, grease, and rust preventives will be made where necessary. Each situation constitutes a separate problem and must be worked out locally in detail using the fundamentals outlined in this section as a guide.

316. PRESERVATIVE MATERIALS

For detailed and complete information on rust, corrosion, inspection for corrosion, rust preventives, preparation of metal surfaces for slushing, method of slushing, inspection of preservative films, and storage conditions, see TM 9-850. Additional information regarding cleaning and preserving materials available is contained in Department of the Army Supply Catalog ORD 3 SNL K-1.

317. MATÉRIEL REQUIRING SPECIAL CONSIDERATION

Because of their nature, many articles placed in storage require special protection from light, heat, cold, moisture, or other conditions. These harmful effects may be intensified in extreme climates such as the tropics or arctic regions. The following paragraphs cover a few items requiring special considerations.

a. *Batteries, Storage.* For complete information concerning storage of batteries, see TM 9-2857.

b. *Canvas.* This matériel should be stowed in a cool, dry place with good circulation of air. Due to its inflammability, it should be accessible so that in case of fire it can be easily reached.

c. *Cooperage.* Wooden containers, such as barrels, crates, and cases made of staves, hoops, headings, or boards, should be kept dry at all times to avoid warping.

d. *Cordage.* All twines, cord, rope, and cable made of textile matériel must be kept in a dry place to avoid rotting.

e. *Drills.* These should be wrapped in oiled paper and kept in a dry place.

f. *Electrical Equipment.* All exposed finished metal parts subject to rust should be coated with a rust preventive compound. Parts or assemblies containing insulating materials or any wiring should be wrapped in waxed paper, if possible, and placed in paper bags, envelopes, or small boxes, properly labelled or tagged, and kept closed.

g. *Gas Cylinders.* Cylinders may be stored in open or closed storage but should be protected from dampness and must be protected against excessive increases in temperature from the direct rays of the sun or other source of heat. They will not be stored near highly inflammable substances or in places where they may be struck by moving objects. Keep inflammable and noninflammable gases in separate buildings or separate open storage. Oxygen in particular will be separated from inflammable gases or matériel. Segregate and tag empty cylinders to avoid confusion. Adequate ventilation will be provided to carry off leakage of inflammable gases. Acetylene gas cylinders will be stored upright. Ammonia cylinders will be stored on their sides. For further information see Department of the Army Supply Catalog ORD 3 SNL K-2 and AR 850-60.

h. *Gaskets, Paper.* Paper gaskets and paper gasket matériels are kept impregnated with light oil to prevent shrinkage and drying, and stored flat.

i. *Hardware, Light.* Shelves, racks, or pegs are utilized for storing such loose articles as saws, hammers, and other hand tools. Securely locked cabinets are used for storing smaller and more valuable articles. Such small loose articles as bolts, nuts, or parts are stored in bins. Racks are provided for pipes, rods, and other articles of similar character to conserve storage space and prevent warping or bending.

j. *Leather.* Should be stowed in a cool, dry place. Since leather is subject to mold and dryness, inspect it periodically. Clean and oil when necessary as described in TM 9-850.

k. *Oils, Paints, Solvents, Varnishes, Etc.* These are highly in-

flammable and should be stored in a separate building or place isolated from other stores. They will be protected from sparks and open flames and isolated from rags, waste, paper, and other materials that may cause spontaneous combustion. Covers should be closed tightly and care exercised to prevent leakage. Protect from the weather if possible.

l. Optical Instruments. These are stored in a locked storeroom and kept dry through the use of silica jell, and free from dust, oil, and grease.

m. Rubber. This should be stored away from light and heat and kept from contact with water, oil, or grease. For a complete discussion on care of tires and tubes, see TM 31-200.

n. Tools. These are kept covered with a film of oil or oiled paper and are inspected frequently for rust. Tools that have been used are thoroughly cleaned with a wire brush or abrasive paper to remove rust. All parts not covered with paint are slushed with compound, rust preventive, thin film, before storing. Tools which are made of chromium alloy steels or chrome-plated should not be cleaned with wire brushes or abrasives because their normal surface is rust-resistant but scratching may destroy this property.

o. Watches. These are handled with special care and stored in the strong room. They should be protected from extremes of heat, cold, and moisture.

318. STORAGE OF SMALL ARMS

These should be kept in suitable packing chests in covered storage. The utmost care must be taken to protect these weapons from dirt and rust to insure perfect functioning of the mechanism and continued accuracy of the barrels. All small arms must be protected against theft.

a. Prevention of Deterioration.

(1) *Preservatives.* If weapons are to be stored for short periods, oil, lubricating preservative, special, should be used on metal parts as a preservative. This protection will last from 2 to 6 weeks depending on climate and storage conditions. For longer periods of storage, rust-preventive compound, either light or heavy, should be used (TM 9-850).

(2) *Preparation for storage.* The weapons should be cleaned and prepared with special care. The bore, all parts of the mechanism, and the exterior surfaces should be thoroughly cleaned and then dried completely with rags. In damp climates, take particular care that the rags are dry. After a metal part is dried, do not touch it with bare hands. All metal parts should then be coated with oil, lubricating,

preservative, or with rust-preventive compound, depending on the length of storage ((1) above). Small parts should be dipped into the rust-preventive compound. Before placing rifles in the packing chests, see that the bolts are in the forward position and that the firing pins have been released. Place the weapon in the packing chest, handling it only by its wooden parts. Under no circumstances, place a weapon in storage wrapped in a cloth or other cover, or with a plug in the bore, because such materials collect moisture which will cause the weapon to rust.

b. Storage of Chests. Chests of arms should be stored with 2- or 3-inch dunnage on the floor and with packing strips about $\frac{1}{2}$ -inch thick between layers. If possible, leave a space of about 1 inch between chests and rows so that air may circulate on all sides.

c. Prevention of Theft. Small arms which are not in chests should be stored in a strong room.

319. STORAGE METHODS FOR OPEN STORAGE

a. General. In addition to the preparation of particular items of material for storage as covered in the field manuals of the 23-series, and the technical manuals pertaining to particular items of equipment, the following precautions should be observed in planning for open storage:

- (1) Protect area from aerial observation.
- (2) Protect supplies and equipment from the effects of the sun and the weather.
- (3) Arrange stacks of supplies so as to provide stability, speed in handling, and ease in making inspections or inventory.

b. Protection Against Weather. To keep the bases of the stacks of equipment dry at all times, lay a foundation of sufficient height to protect the supplies against surface water. Any available material, such as logs, stones, or cordwood, may be used or a regular platform may be constructed. As the stacking proceeds, passages are made for ventilation by inserting dunnage between the layers of the stack. Sufficient ventilation, depending largely on the type of material being stacked, is necessary to prevent the accumulation of enough moisture to deteriorate the supplies. The tops and sides of the stacks should be protected from the direct rays of the sun and against rainfall by tarpaulins securely lashed in place.

c. Methods of Stacking Supplies.

- (1) Palletize supplies wherever practicable. Arrange containers within each pallet load or stack so that inventory and inspection are made easy. In building a stack, use only containers of uniform dimensions.

- (2) Disperse stacks throughout the storage area wherever there is danger of aerial observation.
- (3) When supplies are not palletized and hand stacking is necessary to achieve stability where the sides of the stack are vertical, use strip dunnage between layers or alternate rows of headers and stretchers. The ratio between the length and width of the containers determines the minimum width of the stack, since it is necessary that the width of the layers of stretchers and headers be the same. Ventilation and stability in such an arrangement can be achieved at the same time by leaving a small space between adjacent containers in each row.
- (4) A sloping roof is usually added to the stack to help shed water from canvas covers. Such a roof is formed by reducing the width of the layers alternately by one stretcher or two headers until a layer only one header wide is reached.
- (5) A stack triangular in cross section may be made by placing all packages as headers. The number of containers in each layer is uniformly reduced by one. Since such a stack throws no sharp shadows from the sides, it makes aerial detection more difficult.
- (6) The most suitable height, from the standpoint of the labor involved and convenience in receipt and issue of stock, is from 7 to 10 feet. At depots where large quantities must be kept in open storage, or where issues are infrequent, the height may be increased if necessary, provided adequate handling equipment is available.

d. Protection Against Aerial Observation. When the depot makes use of existing buildings for warehouses, no attempt should be made to camouflage these structures. However, every effort must be made to conceal the activity at the depot and to prevent widening adjacent roads. Special care must be taken to camouflage properly all supplies and equipment that are stored in the open, since these may be easily photographed from the air. For a complete discussion of camouflage, see FM's 5-20, 5-20A, 5-20B, 5-20C, and 5-20D.

Section VI. ISSUES AND SHIPMENTS

320. GENERAL

All operations of the depot are aimed at quick, efficient issue and shipment of matériel. The depot's efficiency is measured by its ability to fill requests promptly.

321. INITIATION

Shipments of matériel to other depots are initiated by requisitions from those depots or by shipping directives issued by higher authority.

Issues to ordnance maintenance shops, service units, and other troops located near the depot are initiated by requisitions. Issue Slip, WD AGO Form 466, is preferred, but other written and verbal requests will be honored.

322. REGISTRATION

a. All requisitions are stamped with the time and date of receipt in the depot mail and record branch and then forwarded to the requisition branch where they are entered in the credit voucher register, (WD AGO Form R-5175, see SR 780-40-1). Each requisition is assigned a credit voucher number for reference and filing purposes and checked for any approval which may be required. The registration clerk then forwards the requisition to the stock record clerk for posting.

b. When enough copies of the incoming requisition are available, the stock record clerk prepares one copy for each storage unit where stock is to be picked by red-lining the items stored and issued by the other storage units. When there are not enough copies of the requisition or when preparing an issue slip is easier than converting copies of requisitions, he prepares an issue slip in duplicate, giving it the same number as the original requisition and also showing storage unit designation.

c. A separate requisition file is maintained for each requesting organization. In it, original requisitions are filed according to the registration number assigned by the depot.

d. Oral requests are translated to issue slips which are made out in quadruplicate. The original and one copy are placed in the requisition file, and the extra copy is mailed to the supply officer of the requesting unit. This practice enables organizational supply officers to detect and investigate any unauthorized oral requests.

e. Shipping orders are stamped, registered, and processed in the same manner as requisitions. The original is placed in the requisition file maintained for its consignee.

323. EDITING NOMENCLATURE AND POSTING

a. Issue slips are distributed among stock clerks for posting according to SNL groups and subgroups. The clerk consults the stock record card for each item listed on the issue slip to determine whether there is sufficient and accurate nomenclature for the stores unit to identify the item. If an item on the issue slip cannot be identified, the matter is placed in the hands of the parts interchangeability clerk who traces the item through interchangeability records and cross-references and furnishes the official stock number under which the depot stores the item.

b. As he checks each item for stock number and nomenclature, the stock clerk determines whether the quantity requested is in stock. The quantity to be issued is entered in pencil on the issue slip, or requisition, and then posted to the stock record card as an issue. If an item is not available, a zero or B.O. is placed in the action column and the quantity requested is posted to the stock record card as a back-order for the requesting unit which makes it a dues-out for the depot. If part of the requested quantity can be supplied, that amount is placed on the issue slip after the item and posted as an issue; the unfilled balance is posted as a due-out and back-order for the requesting organization.

c. The issue slip is then sent to the storage branch and directed to the storage unit handling the listed items for withdrawal from stock.

324. PICKING STOCK

a. When the issue slip is received at the storage unit, the chief of that unit consults the locator cards and indicates the location from which each item is to be picked.

b. In the event the storage unit is unable to issue the whole quantity indicated, the matter is referred to the inventory branch for checking. If additional quantities are not found and the stock record card is in error, the issue slip is returned to the stock record branch which corrects its records and changes the pencil quantity on the issue slip. The storage unit chief should check all items which have been zeroed or which the stock record branch indicated could not be filled in full. If it is found that any of these items are in stock which are not set aside for previous commitments and can be issued in excess of the pencil quantity, the matter is referred to the inventory branch for immediate check as to the status of that item and all pertinent records. As soon as the check is completed, the stock record card and the issue slip are corrected by the stock record branch. In no event will the quantities entered in pencil be altered by anyone outside the stock record branch. No issue will be made unless it coincides with the pencil quantities inserted by the stock record branch.

c. The items and the issue slip are forwarded by the storage unit to the shipping branch.

325. ISSUES

The shipping branch checks all items delivered to it by the storage unit against the issue slip and sets them aside for shipment to the requesting organization. On a retail basis of issue the representative of the receiving organization signs one copy of the issue slip and

retains the other. The receipted copy is returned to the stock record office for filing.

326. SHIPMENTS

a. Items received from the storage units are checked against the issue slip and loose items are packaged. Each package is given a number which is then entered on the issue slip following each item contained in the package.

b. The issue slip is sent to the stock control branch for preparation of shipping documents and a packing list for each package. Copies of the shipping document may be used as packing lists.

c. A copy of the shipping document and a packing list for each package is sent to the shipping branch. In addition, a packing list is placed in or attached to each package. All packages are marked and loose items tagged. Shipping arrangements are completed and bills of lading or similar documents prepared. When railroad cars or trucks arrive, they are loaded by the shipping branch with help from the service branch.

327. EXTRACT REQUISITIONS

If the depot cannot fill a requisition for matériel needed to remove major items from deadline, the requisition section makes up an extract requisition for the items lacking. Extract requisitions are sent to the stock record branch where they are posted as due-in and due-out in the same manner as other requisitions and then forwarded to the next higher echelon of supply for action.

328. DUES-OUT

Whenever issues are posted to stock record cards and the stock on hand balance is less than the quantity requested, the difference between the quantity requested and the quantity issued is posted as a due-out and earmarked for the requesting organization upon receipt.

329. BACK-ORDER ISSUES

Each time a receipt is posted to a stock record card, the clerk checks the card for existing dues-out. If there is a due-out, he immediately prepares a back-order issue slip in triplicate, listing the item and the quantity. Back-order issue slips are given the register number of the requisition which created the due-out. If other items received on incoming shipments being posted are due-out to the same organization, they are listed on the same back-order issue slip. Back-order issue slips are posted to stock record cards as they are prepared. One copy will be placed in file as a temporary supporting voucher for the

originating requisition and two copies are forwarded to the storage section.

330. ISSUE OF DUES-OUT

The storage branch picks the due-out items and forwards them with both copies of the back-order issue slip to the shipping branch. If the items are to be shipped, they are handled in the same manner as other shipments. If they are due-out to maintenance organizations located near the depot, the shipping branch sets the items aside and notifies the organization to call for them. The issue is handled just like other issues.

331. DUE-OUT ITEMS OBTAINED ON EXTRACT REQUISITIONS

Shipments made in response to extract requisitions will be marked for reissue to the original requisitioning organization. The receiving branch will prepare an issue slip using a copy of the shipping document. The issue slip is sent to the stock record branch where it is posted to the stock record card, cancelling the due-in and due-out and posting the quantities as received and issued. This dual posting, as received and issued, is necessary to maintain correct expenditure data. The issue slip is then returned to the receiving branch which forwards it and the items to the shipping branch. The shipping branch ships the matériel or issues it in the same manner as other dues-out. Issue slips are posted to the depot's extract requisition and filed with the customer's requisition.

Section VII. STOCK CONTROL AND REPLENISHMENT

332. COMPUTATION OF STOCK LEVELS

The depot commander directs the stock control division to establish a depot requisitioning objective (control level) and safety level (re-order point) for each item in accordance with levels of supply as prescribed by higher authority. He issues full instruction on methods of computation and gives all data essential for making a factual determination of the anticipated future demands for the prescribed number of days. Actual computations are made by stock clerks as directed by the branch chief. Competent personnel from the inventory branch and other branches of the depot may help when stock levels are being first established or when a major upward or downward revision thereof is necessary. The computed stock levels are entered on the stock record cards.

333. REPLENISHMENT

a. Replenishment requisitions, based upon approved requisitioning objectives, will be prepared and submitted in accordance with schedules prescribed by the initial source of supply.

b. Interim replenishment (special) requisitions will be submitted only when stock on hand and/or due-in the depot is not sufficient to maintain continuity in normal depot operations pending the receipt of stocks to be obtained as a result of the next stock replenishment requisition. Proper depot supply planning and the proper reflection of requirements in stock replenishment requisitions will obviate the use of the interim (special) requisition.

c. Copies of requisitions are used by the stock record branch to post quantities "dues-in" to the stock record cards.

334. INVENTORIES

The inventory branch is responsible for taking continuous cycle, complete shut-down and special inventories (see SR 780-40-5). The type of inventory to be taken is dependent upon the mission of the installation.

Section VIII. REGISTERS, FILES, RECORDS, AND REPORTS

335. RECEIVING BRANCH

a. This branch maintains a register for incoming shipments.

b. It maintains files for shipping documents or other notices of pending receipts.

336. REQUISITION BRANCH

a. This branch maintains registers for incoming or credit requisitions and outgoing or debit requisitions.

b. It maintains files of incoming requisitions and outgoing requisitions.

337. SHIPPING BRANCH

This branch keeps an outgoing shipment register.

338. STOCK RECORD BRANCH

a. This branch maintains—

(1) Files of status of stocks reports and due-out reports.

(2) Stock record account including a stock record card for each item handled by the depot.

b. Prepares reports of status of stock and dues-out.

339. STORAGE BRANCH

The storage branch maintains a locator record for each item in storage.

Section IX. EXPLANATION OF FORMS, RECORDS, AND REPORTS

340. SHIPPING DOCUMENT

The Army shipping document replaces tally-outs, packing lists, shipping tickets, and other shipping and receiving forms and will be used in lieu thereof at all times. Items should be listed by alphabetical SNL group and numerically within SNL subgroups. When two or more items are placed in one package, one entry is made in the column showing number and type of packages, total weight, and total cube. Normally, that entry is made in the line occupied by the last item. However, the package number will be entered on every line occupied by an item in that package. For a detailed discussion of the shipping document, see TM 38-403 and TM 38-705.

341. ISSUE SLIP

WD AGO Form 446 will normally be used for making issues. This form may be used in any of the following ways:

a. Issue Slip Directing Issue. Issue slips prepared for oral requests may be prepared on this form. Stock numbers are entered in the second column, nomenclature in the third, units of measure in the sixth, and quantities requested in the seventh column. Quantities issued are entered in the last column. The first column is used by the shipping section to indicate the package number or numbers for each item. The weight and volume of each package are given below the last item or on an attached list.

b. Back-Order Issue Slips. Back-order issue slips may be made on this form and the word "Back-order" placed at the top of the form.

342. REQUISITIONS

Items are listed by SNL subgroups and numerically within subgroups. The use of the spaces in the heading and the column in the body of the form are self-explanatory. (Preprinted requisitions can do much in certain special situations to expedite supply to using units. They also, being correctly prepared, teach using units by example the correct preparation of any and all forms on which supplies are requested.)

343. SHIPPING ORDERS

Shipping orders may be cables, teletypes, telegrams, or written forms. Whatever they are, they must give this essential information—

- a. Authority issuing the order.
- b. Depot being directed to make the shipment.
- c. Designation and address of the depot or organization to which the shipment is being sent.
- d. Items and quantities to be shipped, with nomenclature and stock number of each. Items should be listed by SNL subgroups and numerically within subgroups.

344. EXCHANGE FORMS

Property turn-in slip. WD AGO Form 447 is used when unserviceable items are turned in for exchange or when matériel is turned in as excess. All matériel turned in should be tagged to show its correct nomenclature and stock number.

345. REQUISITION REGISTERS

a. *Incoming Requisitions (Credit Vouchers) at Communications Zone Depot.* All incoming requisitions and shipping orders are entered on a register and assigned a voucher number. The following information is shown:

- (1) Voucher number.
- (2) Date received.
- (3) Requesting organization or one to which matériel is shipped.
- (4) Requisition number assigned by requesting organization or the shipping order number.
- (5) Classification of requisition or shipping order.
- (6) Remarks showing action taken (i.e. filled or partially filled) cross-referenced to extract requisitions and any other pertinent information.

b. *Incoming Requisitions (Credit Vouchers) at Army Field Depots.* Incoming requisitions are entered on a register sheet and should show the following information:

- (1) Credit voucher number assigned.
- (2) Date the requisition was received.
- (3) Number assigned to the requisition by the requesting organization.
- (4) Remarks showing classification of the requisition, action taken, and all other pertinent information.

c. *Outgoing Requisitions.* These are registered and assigned a voucher number. They show the following information:

- (1) Requisition voucher number.
- (2) Date.
- (3) Organization on which the requisition is made.
- (4) Classification of the requisition (i.e. stock replenishment, ex-

tract, or routine), including a cross-reference to customer's requisition if an extract has been made.

- (5) Remarks showing follow-up efforts and receipts.

346. INCOMING SHIPMENT REGISTER

The incoming shipment register should be composed of the following sections:

a. Shipping Document Section. This section is established for each unit shipping to the depot. Shipping documents are registered according to the shipper's number and cross reference is made to—

- (1) Advance reports of shipments.
- (2) Depot's requisition on which the shipment was made.
- (3) Number of shipping order directing shipment.
- (4) Bill of lading or shipping manifests covering the shipment.
- (5) Any other document pertaining to the shipment.

b. Bill of Lading Section. Bills of lading are registered by serial number and cross-reference is made to the shipping document number.

c. Manifest Section. Manifests are registered by number and cross-referenced to the shipper and the shipping document number.

347. OUTGOING SHIPMENT REGISTER

All outgoing shipments are registered by the depot's shipping document number, and are cross-referenced to—

- a.* Shipping orders or requisitions initiating the shipment.
- b.* Bills of lading or manifests covering the shipment.

348. LOCATOR RECORDS

The storage branch keeps a locator record consisting of one card for each item stored. In certain cases, the location of each item is entered on the stock record cards. In the communications zone depot, the locator record is kept on cards which are filed numerically within SNL subgroups. Figure 16 shows a suggested locator card which can be reproduced locally.

349. STOCK RECORDS

a. Communications Zone Depots. The stock record of communications zone depots is usually kept on WD AGO Form 421 filed in cabinet trays or tub files.

- (1) *Preparation of stock record cards.* The stock number under which the item is stored and issued is entered in the space marked "Stock No.". The complete nomenclature of the item should be placed in the space marked "Description." The SNL subgroup under which the item is requisitioned, stored,

LOCATOR CARD			
STOCK NUMBER		SNL GROUP	
NOMENCLATURE			
DIVISION	BIN LOCATION SECTION (ROW)		SHELF (TIER)
BIN SIZE			UNIT
DIVISION	ALTERNATE LOCATION SECTION (ROW)		SHELF (TIER)
BIN SIZE			UNIT
INTERCHANGEABILITY			
1. _____			
2. _____			
3. _____			
4. _____			

Figure 16. Sample locator card.

and issued; the control level (requisitioning objective); and the re-order point (safety level) are entered in the spaces designated "Class," "Control Level," and "Re-order Point," respectively.

- (2) *Arrangement of cards.* Stock record cards are grouped by SNL subgroups and are arranged within subgroups numerically. The cards should be placed so that additional cards may be inserted without too much rearranging.

- b. Field Depots.* The system used by combat zone field depots may be the same as in the communications zone or it may consist of cabinets with visible record type files.

350. STATUS REPORTS

Status reports are made according to schedules and directives issued by higher authority. Items are listed numerically within SNL subgroups and the following data is shown for each item:

- a.* Stock number.
- b.* Nomenclature.
- c.* Quantity on hand.
- d.* "Due-in," "due-out," or both.

351. DUES-OUT REPORTS

Dues-out reports are submitted periodically as required by higher authority. All items which the depot has on back-order are listed by SNL subgroup and numerically within SNL subgroups. The following information is shown:

- a.* Stock number.
- b.* Nomenclature.
- c.* Quantity due-out on deadline requisitions.
- d.* Quantity due-out on stock replenishment requisitions.
- e.* Total quantity due-out.

CHAPTER 14

STOCK CONTROL

Section I. GENERAL

352. PURPOSE

The purpose of stock control is to correlate supply with demands and to make sure that stocks in supply establishments are kept in careful balance. This correlation is a continuing process and requirements must be estimated sufficiently far in advance so that the zone of the interior receives advance information of unusual demands in time to permit rescheduling of production. Stock control has two objectives—

a. The first objective is the maintaining of adequate balanced stocks in all supply installations within the limits of available supply in accordance with directives from control agencies.

b. The other objective is the insuring of the best distribution of available supply in keeping with present and future needs and anticipated future supply.

353. LEVELS OF SUPPLY

a. General. The Department of the Army prescribes the number of days of supply for each theater. (AR 710-25). The theater commander apportions this authorized level, stated in days of supply, between the communications zone and the armies and independent commands operating in the theater. Each commander of the above commands apportions his share among his supply agencies.

b. Determining Factors. In establishing levels of supply for individual supply points, the following factors are considered:

- (1) Supply level prescribed by higher authority.
- (2) Location of each supply installation.
- (3) Normal replenishment period for each installation and the regularity of resupply.

354. COMPUTATION OF LEVELS

a. Calculation. Based upon the prescribed number of days supply, each depot and supply installation will convert the approved stockage objective from "days of supply" to specific quantities for each item stored. Normally, past recurring issue experience will be utilized as a basis for determining an average consumption factor. In the absence of past consumption data, replacement factors established in Department of the Army Supply Catalog ORD No. 8 will

be utilized. Objectives so established should be adjusted as soon as issue experience has been obtained. Nonrecurring initial issues, transfers, and issues to special units will be excluded in the computation of the stockage objective. Quantitative stockage objective is determined by multiplying the replacement factor (issue experience) by the number of days' supply prescribed and then by multiplying by the number of major items supported or to be supported.

b. Adjusting Computed Stock Levels. Computed stockage objective resulting in a fraction of a unit should be raised to the next higher number. In addition, the storage and handling of certain items may be easier if stockage objectives are rounded out to multiples of full packages. This is particularly true of large depots storing in bulk. With slow moving items, the quantity involved in a single issue may be greater than the computed level. In this event, the stockage objective should be raised to a multiple of the number usually issued at one time. These matters should be provided for as part of the ordnance SOP.

355. REPLENISHMENT

The commander of each depot is charged with maintaining stock on hand within the authorized stockage objective. Action taken to obtain resupply must be correlated to the replenishment period and anticipated demands.

a. Requisitioning Objective. The requisitioning objective (control level) is the quantity authorized to be on hand and due in for each item handled by the depot. It represents the stockage objective plus the estimated issues during the anticipated replenishment period (order and shipping time).

b. Review of Stock Status. Periodically, the stock status of each item is reviewed and necessary action taken to replenish stock. Schedules of stock review are established giving the day or days of the month on which each SNL subgroup will be reviewed. When stock is reviewed, requisitions are prepared if necessary to bring stock on hand plus dues-in up to the depot requisitioning objective.

c. Safety Level. A safety level is established for each item which represents emergency replenishment time. It is a quantity (in addition to the operating level) of matériel required to permit continued operations in the event of minor interruption of normal replenishment or unpredictable fluctuations in supply demand. When stock on hand is reduced to or below this level, special measures will be taken to expedite resupply.

356. REVISION OF LEVELS

Whenever quantitative stockage objectives are either too high or too low, the depot commander explains the facts to the authority

prescribing the level and recommends a revision of either the level or the replacement factor. Adjustments usually follow changes in the number of major items authorized for supported troops. Occasionally, a change of tactics develops unusual stress on a particular item or items. It is imperative that all ordnance stock control personnel concerned be alert for such conditions and make every effort to accomplish readjustments in stockage objectives, if possible, before the item becomes critical.

357. ESSENTIAL INFORMATION

To make stock control effective, each depot must keep records making the following information immediately available for each item:

- a. Nomenclature, stock number, and unit of measure.
- b. Quantity on hand and location.
- c. Quantity due out.
- d. Depot requisitioning objective.
- e. Depot stockage objective.
- f. Depot safety level.
- g. Quantity and status of dues-in.
- h. Interchangeability.

Section II. THEATER STOCK CONTROL

358. GENERAL

The theater ordnance officer or his designated agent exercises stock control of ordnance matériel for the theater. Such control includes not only stock control but both short and long range supply planning and the implementation of these plans. It includes requisitioning on the zone of interior for quantities and items required to meet the theater demand. Stock control insures timely distribution of the proper amount of required items between field armies and supporting communications zone sections.

359. THEATER CENTRAL STOCK CONTROL FOR ORDNANCE

a. *General.* Central stock control is normally operated under the jurisdiction of the communications zone ordnance officer.

b. *Functions.* Theater stock control for ordnance performs, but is not necessarily limited to, the following functions:

- (1) Maintenance of such historical and statistical records as may be required for compiling and analyzing supply data.
- (2) Maintenance of theater ordnance stocks in accordance with prescribed supply levels.
- (3) Recommend changes in supply levels when the need arises.

- (4) Advice to the Department of the Army on the status of ordnance general supplies within the theater and submission of estimates of future needs.
- (5) Requisition on the zone of the interior and initiate local procurement within the theater.
- (6) In accordance with the desires of the theater army commander, controls distribution of theater stocks.
- (7) Exercise special control over items in short supply.
- (8) Inform all interested commanders and supply echelons of the status of critical items.
- (9) Have information available at all times as to quantities and types of ordnance supplies due in to the theater from the zone of interior and the expected dates of arrival.

c. Records. To perform these functions, stock control must maintain stock records which will reflect for each item:

- (1) Quantity due in for the theater.
- (2) Quantity due out from the theater.
- (3) Quantity due out within the theater.
- (4) Quantity available through local procurement.
- (5) Quantity on hand within each subordinate command of the communications zone.
- (6) Quantity on hand in army depots within the combat zone.

d. Dues-In. The stock control point must keep an accurate record of all requisitions submitted by the theater and of all local procurement. If the theater is supplied partly or entirely by prearranged shipments or on the basis of status reports, accurate records must be kept to show the quantities to be shipped.

Section III. STOCK CONTROL, HEADQUARTERS COMMUNICATIONS ZONE SECTION

360. GENERAL

The ordnance stock control functions within headquarters of sections of a communications zone are performed by personnel organized under appropriate T/O&E's. The functions and responsibilities of this section are similar to those of the theater central stock control agency, except that it is not responsible for requisition on the zone of the interior and it is not required to interpret balances to as great an extent.

361. RESPONSIBILITIES

Stock control personnel operating under the ordnance officer of a communications zone section is responsible for the following:

- a.* Maintaining sufficient stock within the section to fulfill the levels prescribed by higher authority.

b. Consolidation of requisitions and forwarding of same to higher authority.

c. Trans-shipment of supplies to other sections upon specific directions of the central supply control agency.

d. Special studies on items in short supply and regulated items to assist higher authority in their control.

e. Recommendations on and disposition of excess and obsolete stocks.

f. Over-all supervision of stock control operations in depots of the communications zone section.

g. Reporting of any foreseeable deficiencies in ordnance supply to higher headquarters.

Section IV. ARMY AND COMMUNICATIONS ZONE DEPOTS

362. GENERAL

Stock control and procedures of army field depots are the same as those of communications zone depots. Stock control procedures are explained in the following section.

363. STOCK CONTROL DIVISION RESPONSIBILITIES

The stock control division of supply depots is responsible for—

a. The procurement of balanced stocks of ordnance general supplies as required by the depot mission.

b. Accomplishing the maximum effective distribution of ordnance general supplies with the minimum quantitative demand for replenishment.

c. Detecting and reporting excess items and surplus quantities.

364. PRINCIPAL FUNCTIONS OF THE STOCK CONTROL DIVISION

In accomplishing the responsibilities of the stock control division as outlined in the above paragraph, this division will perform the following functions:

a. Receive and process all documents pertaining to incoming and outgoing ordnance general supplies, including preparation of the master and order copies of shipping documents.

b. Follow-up on all requisitions received by the depot to insure that complete supply action has been taken on all items included thereon.

c. Advise the requisitioning agency or customer of the supply action taken on each requisition in accordance with current theater policy.

d. Establish, review, and revise depot stock levels in accordance with instructions received from the theater army stock control agency.

Report excess and surplus stocks of ordnance general supplies generated at the depot and request disposal instructions.

e. Initiate action for the replenishment of depot stocks on those items of ordnance general supply for which the depot has responsibility and provide information to the storage section relative to the shipment of incoming property.

f. Maintain stock record accounts (see AR 35-6520).

g. Effect adjustments to stock records on the basis of inventories taken by the storage section.

h. Maintain accountable property record of ordnance general supply.

365. SUPPLY REPORTS

a. *Depot Supply Operations.* SR 780-5-5 prescribes the system for reporting on supply operations. This system, appropriately modified, will be the basis for the depot supply operations reports required of ordnance depots in a theater of operations. This reporting system forms the basis for analyzing the efficiency of ordnance depots.

b. *Equipment Status Reports.* SR 711-45-1 prescribes the system for reporting inventory information on the quantity and condition of ordnance equipment in the hands of troops in peacetime. This system, appropriately modified, will be the basis for the status of equipment reports submitted by the various tactical and logistical major commands in a theater of operations. Essentially, the system is based on an initial inventory and allowance list prepared on the basis of information provided by the appropriate ordnance staff officer. Each organization, upon being assigned to a major command, edits the initial inventory and allowance list to reflect its current equipment status. Thereafter, reports of changes are submitted by the organization as changes occur. Consolidated equipment status reports are prepared by each major command, at periods prescribed by the theater army stock control agency, and form the basis for the allocation of ordnance equipment.

c. *Machine Records Reports, or Manually Prepared Depot Status Reports.* These reports are submitted by ordnance depots of the communications zone and army ordnance depots, on a schedule prescribed by the theater army stock control agency, to reflect the status of serviceable ordnance equipment in the hands of ordnance depots and the status of unserviceable, nonrepairable ordnance equipment in depot and field maintenance organizations. Any item of unserviceable ordnance equipment in the hands of army ordnance service, which is shown to be beyond the economical repair limit established for field maintenance is reported as nonrepairable.

366. ORDNANCE GENERAL SUPPLY ACCOUNTABLE PROPERTY OFFICER

In a theater of operations, property accountability may be relaxed to the extent that formal audits are dispensed with and authority from higher headquarters is not required to establish a stock record account. Beyond these modifications there is no relaxing of the requirements for accurate accounting for ordnance general supplies received and issued. The procedures adopted in a theater of operations will follow closely the procedures prescribed in AR 35-6520, AR 35-6560, TM 38-400, TM 38-403, and SR 780-40-1.

367. ACCOUNTABILITY SPOT CHECKS

In lieu of formal audits, the depot commander will require spot-check inspections of ordnance general supplies and accounting records to be made from time to time. These spot checks will consist of a special inventory of selected items, a check of the corresponding figures on stock record cards, and examination of vouchers supporting the stock record cards. Discrepancies or irregularities of any consequence require investigation and corrective action.

Section V. STOCK CONTROL PROCEDURES

368. GENERAL

a. Reference. SR 780-40-1 governs stock control procedures at a fixed type ordnance depot and is the basis for training personnel of ordnance depot companies. It should be noted that these procedures are applicable to both machine and manual methods of posting. Basic stock control procedures are published by the theater army stock control agency. Local interpretations and clarification of the basic procedures will be incorporated in the standing operating procedures of each ordnance depot. The document files and control registers authorized to be maintained by ordnance depots are listed and described in SR 780-40-1. Additional forms or variations of prescribed forms will not be used without the approval of the depot management office.

b. Depot Stock Levels. The responsibility for establishing depot stock levels are covered in SR 780-40-1. It will be noted that a stockage objective may be furnished the depot by the theater army stock control agency or as an alternative method, the depot commander may be required to compute the stockage objective. In the latter method, the depot commander must insure that the depot mission is specific in terms of ordnance SNL groups to be stocked; that the days of supply to be stocked and the order and delivery time is mutually understood; that the number of major items to be supported is stated or

can be computed without chance of duplication; and that the column of the ordnance catalog to be used is specified. This information is essential if pyramiding of requirements is to be avoided.

369. REPLENISHMENT OF DEPOT STOCKS

This subject is covered in SR 780-40-1. It should be noted that either of two methods may be used. When base and intermediate ordnance depots submit machine records reports of their supply status, including issue experience on a schedule published by the theater army stock control agency, it is preferable for that agency to issue shipping directives directing the distribution of stocks to replenish stock levels. Communications zone advance depots and army ordnance depots normally operate on a manual system of stock control and submit replenishment requisitions on a prescribed schedule. An exception is made in the case of major and regulated items included on periodic status of matériel reports. These reports are received by the theater army stock control agency, coded for processing through accounting machines, and requirements are directed to be shipped on the basis of availability and controls imposed by the theater army ordnance officer.

370. SUBMISSION OF REQUISITIONS

a. Each ordnance depot will publish a schedule for the submission of replenishment requisitions and will specify the groups of ordnance general supply to be listed on separate requisitions. This authority is granted to ordnance depots only to permit the orderly processing of requisitions and customers should be so informed.

b. Special requisitions may be submitted when such action is necessary to meet emergencies or when authorized by appropriate tactical and logistical commanders.

371. TYPES OF REQUISITIONS

a. *Replenishment Requisitions.* Replenishment requisitions are submitted periodically to replenish ordnance general supplies consumed in operations and to bring stock levels up to the authorized quantity. Replenishment requisitions will be submitted for only those items of which the serviceable balance on hand, plus quantities due in, minus quantities due out, is less than the requisitioning objective.

b. *Special Requisitions.* Special requisitions will be submitted when supplies are required immediately to prevent delay in critical work such as the modification of tactical equipment, programmed rebuild or repair operations, or to ready combat equipment for service. It must be understood that the processing of special requisitions interrupts the normal flow of work, delays service on replenishment

requisitions, and is generally indicative of a failure to properly plan. Priorities are established for special requisitions as follows:

- (1) *Blue-streak action requisitions.* A blue-streak action requisition is a high priority request for supplies to support an urgent operational project, approved by a tactical or logistical commander. Such requisitions will be processed immediately; hand-carried through the stock control and storage sections, and the supplies requested will be dispatched by the most expeditious means. All queries and extractions will be handled by the most expeditious means of communication. Such requisitions will be preceded by the prefix BSA to the number and will cite the authority for the blue-streak action.
- (2) *EOAP (Equipment Out of Action for Parts) requisition.* An EOAP requisition is a priority requisition for parts required to return a piece of combat equipment such as an artillery piece or a combat vehicle to a serviceable status. Such a requisition will be identified by the prefix EOAP to the requisition number. The use of this priority is reserved to tactical organizations actually in combat with the enemy. Parts required by EOAP requisitions will be delivered by field maintenance units and are hand-carried through ordnance depots.
- (3) *VOCP (Vehicle Out of Commission for Parts) requisition.* A VOCP requisition is a priority requisition for parts required to return general purpose or special equipment to service. Such a requisition will be identified by the prefix VOCP to the requisition number. VOCP requisitions are accepted by depots issuing to field maintenance units, but beyond the first line of issuing depots the order is not accorded special priority and is incorporated in the next replenishment requisition. Effort is made by the field maintenance unit receiving a VOCP requisition to obtain the needed part from adjacent field maintenance units through lateral supply prior to processing the requisition to an ordnance depot as a special requisition.

c. *Telegraphic Requisitions.* Special requisitions may be submitted by electrical means, placing pertinent information under six column headings A to F and separating the information by a diagonal (/).

A	B	C	D	E	F
Reqn. No.	Quantity	Stock No.	Nomenclature	Type & Model	Location

An example of a telegraphic request for a gas-check obturator pad for a 155-mm gun M2 needed by the 337th Ordnance Company for re-issue to the 711th Field Artillery Battalion would be—

A-EOAP 337 Ord-101-50/B-1 each/C-D024-01-00410/D-Pad,
gas-check obturator/E-Gun 155-mm M2/F-711 FA Bn.

372. BACK ORDER

a. Items of ordnance general supply, not available in the ordnance depot, will be back ordered when an advance shipping notice (shipping document, report of shipment, or an annotated, returned copy of a replenishment requisition) has been received to indicate shipment of the requested items. The due out suspense file is maintained by the stock accounting branch if accounting machines are utilized and by the incoming property section, if manual methods of accounting are utilized. Upon receipt of the requested items by the storage division, the items are released to the customer and the due out is closed.

b. Where items of ordnance general supply are determined to be not available in the ordnance depot and no advance shipping notice has been received, they will be included in the next replenishment requisition. In the case of blue-streak action or equipment out of action for parts requisitions, a telegraphic extract requisition will be submitted to the theater army stock control agency.

CHAPTER 15

TRAINING

Section I. GENERAL

373. OBJECTIVE

The training of maintenance and general supply personnel of an ordnance unit must be conducted in a manner that will insure efficient performance of the unit's mission.

374. TRAINING PROGRAMS

a. Training programs are normally furnished by higher headquarters. These programs serve as guides to the unit commander to insure that important subjects are not overlooked and to assist him in budgeting his time. Utilizing the training program as a guide, the unit commander prepares his training schedule showing subjects to be covered day by day and includes appropriate references as to time, place, uniforms, equipment, tests, and training aids. Training activities must be closely supervised by the unit commander, and the training program revised as necessary to obtain the maximum benefit from the time available.

b. In developing a training schedule, the unit commander must consider a number of variables which affect the methods of training used, the types of subjects selected, their sequence, and the proportions of time allotted. Among these variables are—

- (1) Anticipated mission.
- (2) Present training status of the unit.
- (3) Number and type of replacements.
- (4) Time available for training.
- (5) Weather and climatic conditions.
- (6) Training areas and facilities.
- (7) Status of equipment.
- (8) Special subjects to be stressed.
- (9) Obstacles to training.

375. METHODS

Training is conducted in accordance with the principles discussed in FM 21-5. Commanders will indoctrinate every officer and enlisted man engaged in training ordnance personnel with the necessity for the highest degree of personal leadership. Supervisors in all echelons must insure that training personnel are masters of their trade. Train-

ing personnel must exploit the natural pride of the individual in the efficiency and reputation of his unit.

376. RECORDS

Due to the fact that it is not practicable to obtain 100 percent attendance at all training sessions, and in order to determine the progress of training, records will be kept showing the status of individual and unit training.

377. TRAINING PHASES

The training of ordnance maintenance and general supply personnel is conducted in three phases. The first phase consists of individual training and includes the training of the individual in basic military subjects, such as rifle marksmanship, first aid, and technical instruction in the appropriate specialist course. Technical instructions will include the presentation of the theory upon which operations are based and also the practical application thereof. The second phase is the unit training phase during which the individual is offered every opportunity to practice, as a member of a team, the military and technical knowledge previously acquired. The third phase consists of combined arms training in which the organization is given the opportunity to operate as a unit, under maximum loads, in its normal mission of supporting the arms and other services.

Section II. INDIVIDUAL TRAINING

378. CADRE

The first consideration in training an ordnance maintenance and general supply unit is the training status of the cadre. A cadre is that group of key officers and enlisted men considered necessary to establish and train a new unit. In order to successfully achieve the training objective, the unit commander must insure that the cadre is proficient in both military and technical subjects. The amount of cadre training necessary will vary in proportion to the quality and status of training of the individual cadremen. The cadre personnel must know their subjects thoroughly before attempting to instruct others. Refresher courses, in the form of troop schools covering various training subjects, may be conducted for the cadre prior to the instruction of other unit personnel.

379. BASIC MILITARY TRAINING

Proficiency in basic military subjects, including passive defense and minor tactics, is the first objective of individual training. This training must insure that all able bodied soldiers will be trained in the

fundamentals of basic infantry combat to include squad tactics. Regardless of assignment, the soldier must be prepared to participate in the defense of his installation against a light attack so that combat units will not be required for this purpose. The ordnance maintenance and general supply unit may be required to conduct basic military training. Normally, however, basic military training will be conducted in replacement training centers, and the ordnance unit will receive fillers who have completed their basic military training. The fact that training is conducted in another organization does not relieve the unit commander of responsibility for insuring that personnel assigned to his unit are properly trained. Due to the complexity of specialist training, the requirements of military training are often overlooked. The ordnance unit must continually conduct refresher courses in military subjects to insure that proficiency is maintained in this field at all times.

380. SPECIALIST TRAINING

The objective of specialist training is to develop ability to apply special qualifications to military situations. Specialist training must be emphasized, in order that the individual may be qualified to take his place in the unit and to produce work of a quality that will enable the unit to accomplish its mission. The qualifications required of ordnance specialists indicate the scope of training that must be given them. The ordnance unit commander will be required to train the maximum number of specialists in unit schools and through on-the-job training. For certain common specialities, adequate training can be given while functional duties are being performed whereas others require resident instruction at service schools. When the time required for a specialist course exceeds that allotted in the training program, such training will be continued for the individual concurrently with the unit training phase of the program.

Section III. UNIT AND COMBINED ARMS TRAINING

381. GENERAL

The objective of the unit and combined arms training phases of the training program is to weld the organization into a military unit capable of efficiently performing its mission. During this phase of training, all members of the organization perform on-the-job training, and they are offered every opportunity to practice, as a member of a team, under the most realistic conditions practicable, the military and technical knowledge previously acquired. The unit must be trained to defend itself on the march, in bivouac, and under all types of attack. It must be trained to accomplish its mission in the field.

and actually work long hours in the field under adverse conditions. The training of ordnance units will provide for the defense of the unit area to include the organization and employment of small arms and automatic weapons fire platoons, rocket launcher platoons, and armed fire fighting teams. Area defense training will include active defense as well as passive defense and coordination of defense efforts with adjacent units to obtain the benefits of mutual support. To prevent a too great emphasis on the secondary mission at the expense of the primary mission, the defense training of ordnance units should be directed toward battle drills, that is, repeated rehearsals of a few simple combat situations until the reaction of the individual soldier becomes automatic.

382. FIELD TRAINING

Several weeks of the unit phase will be spent in the field in tactical bivouac. During this time, technical activities normal to the unit will be practiced to the maximum extent. The first part of field training will be directed toward the development of those skills and techniques important to living and working under field conditions. Situations requiring improvisation and the use of field expedients will be introduced. Whenever possible, conditions peculiar to the expected theater of operations should be simulated. Frequent displacement will be required in the case of mobile and semimobile units. Prior planning for movement, reconnaissance to locate new position, selection of terrain for movement, and organization of the area will be stressed.

383. COMBINED ARMS TRAINING

Combined arms training provides for the operation of the ordnance unit, under maximum loads, in its normal support mission. This training is provided in field exercises or maneuvers. The ordnance unit commander is responsible that the utilization of his unit, during field exercises and maneuvers, provides the maximum amount of training. He must be alert to advise the higher echelon of command of any assignment or deficiencies that adversely affect the training of his unit.

384. CROSS TRAINING

In order to obtain the flexibility within the organization necessary to accomplish with maximum efficiency the varying types of workloads, personnel must be trained in two or more specialities whenever practical. This cross-training makes possible the transfer of personnel between sections as the workload varies. The ordnance unit commander must exploit this type of training whenever it does not interfere with performance of the unit mission.

385. FILLERS

Finally, the ordnance unit must become adept at training filler personnel to take their places in the organization. The training of fillers is a continuing process due to constant changes in personnel caused by sickness, cadre levies, and various other reasons. It is necessary that the unit commander evaluate the instructional abilities of his personnel and utilize only the best in this type of training.

APPENDIX I

SAMPLE LETTER FOR NOTIFICATION OF TASK ASSIGNMENT

HEADQUARTERS

000 Ordnance MM Co

APO 1000

Date_____

SUBJECT: Direct Support Ordnance Maintenance and Supply
Service

TO:

1. Your unit has been assigned to the 000 Ordnance Medium Maintenance Co. for direct support.

2. This company is currently located at_____on the 1:50000 scale map of this area.

3. You may expect representatives of this your direct support ordnance company to contact you daily for the purpose of delivering supplies, determining your maintenance needs and picking up requests for additional Class II and IV Ordnance supplies.

4. This company will also deliver to you replacement major items either on a direct exchange basis for like unserviceable items or on presentation of a statement of battle losses. T/O&E shortages will be filled automatically based on your major items status report as availability permits. In certain specific cases where items are in critical supply, this company cannot make issues without obtaining an allocation from higher authority. In every case, however, replacements will be made within 24 hours of your notification of the loss unless Army-wide shortages prevent.

5. Spare parts and supplies will be delivered upon receipt of a request, either verbal or on presentation of a requisition to the contact party visiting you daily. Again delivery will be made within 24 hours on items immediately available. When not available, items will be backordered and no further action by your organization is required. We will make delivery immediately upon receipt. You are encouraged but not required to requisition on the standard form intended for this purpose since this will tend to give you as well as your direct support Ordnance service a continuing review of your basic load which should be on hand in your units at all times.

6. In addition to daily maintenance and supply support, this

company is prepared to meet any special requests including complete rehabilitation of your Ordnance equipment when your operations permit delivery of major items combat loaded with basic load of ammunition specified by you when applicable, arrange Signal maintenance of installed radio equipment, modification or manufacture of any special items your special situation requires and to assist as instructors or inspectors under mutually agreed conditions. The ultimate aim is to knit your organizational service support and your direct Ordnance maintenance and supply service together for the benefit of your organization and its equipment.

7. Every request of yours will be given careful attention and every effort will be made to keep you completely and serviceably equipped with Ordnance matériel and supplies.

8. I will visit you on _____ for the purpose of establishing personal contact and rendering any assistance possible.

JOHN DOE
Captain, Ord Corps
Commanding

APPENDIX II

SAMPLE ORDNANCE INSPECTION SHEETS

1. The following is a suggested inspection sheet to be used in the inspection of ordnance automotive and armament matériel.

ORDNANCE INSPECTION SHEET

Unit designation_____ Date_____

I. AUTOMOTIVE INSPECTION:

- | | <i>Vehicles</i> | <i>Vehicles</i> | <i>Av. def.</i> | |
|---|-----------------|------------------|--------------------|---------------|
| | <i>on hand</i> | <i>inspected</i> | <i>per veh.</i> | <i>Rating</i> |
| 1. <i>Condition of vehicles</i> | | | | |
| a. Wheeled Vehicles: | | | | |
| b. Tracked Vehicles: | | | | |
| c. Trailers: | | | | |
| 2. <i>Most common deficiencies found on vehicles</i> | | | <i>No. veh. on</i> | |
| 3. <i>Maintenance training, maintenance administration, and shop operation.</i> | | | | |
| a. <i>Administration & Shop operation</i> | | | | <i>Rating</i> |
| (1) Maint. adm. | | | | |
| (2) Maint. records. | | | | |
| (3) Shop operation. | | | | |
| (4) Parts supply. | | | | |
| 4. <i>Deficiencies found in maintenance administration and records.</i> | | | | |
| 5. <i>Deficiencies found in shop operation and parts supply</i> | | | | |
| 6. <i>Status of modification work orders:</i> | | | | |
| 7. <i>Conduct of motor stables:</i> | | | | |
| 8. <i>Additional remarks:</i> | | | | |

II. ARMAMENT:

- | | <i>No. on</i> | <i>No. in-</i> | <i>Av. def.</i> | |
|---|----------------|----------------|---------------------------|-------------------|
| | <i>Hand</i> | <i>spected</i> | <i>per item</i> | <i>Org. Field</i> |
| 1. <i>Condition of Armament:</i> | | | | |
| a. Artillery (all types): | | | | |
| b. Small Arms (all types): | | | | |
| c. Instruments (all types): | | | | |
| 2. <i>Deficiencies found:</i> | | | | |
| a. (Artillery) | | | | |
| b. (Small arms) | | | | |
| c. (Instruments) | | | | |
| 3. <i>Specialists:</i> | <i>Armorer</i> | | <i>Artillery Mechanic</i> | |
| 4. <i>Status of modification work orders:</i> | | | | |

- e. Lubricant containers properly marked
with Army Spec. No.
- f. Fire extinguisher at oil house.
- g. Additional comments:

4. *General:*

- a. Work benches clean, except for current
work
- b. Safety precautions used by blocking
vehicles in jacked-up positions.
- c. All pertinent publications are on hand or
requisition
- d. Additional comments:

SPARE PARTS SUPPLY

Spare Parts Supply:

- a. Parts properly tagged and stored.
- b. Parts properly preserved and protected.
- c. No general excess of parts.
- d. Parts cards contain maximum and
minimum figures
- e. Maximum quantities on cards agree with
Ord 7 section latest SNL.
- f. Items on requisition indicated under
"On Order"
- g. Location and quantity of parts agree
with cards
- h. Parts cards properly filled.
- i. Additional comments:

3. The following is a suggested inspection sheet for inspection of preventive maintenance administration and maintenance records.

Unit designation _____ Date _____

MAINTENANCE ADMINISTRATION

1. *Motor Stables:*

- a. Regularly scheduled
- b. Approximately one (1) hour allowed per
"After Operations Services"
- c. Officers and NCO's actively supervise.

- d. 1st echelon maintenance properly performed
- e. Tools and lubricants are properly used
- f. Vehicles are lubricated after washing
- g. One man is present for each vehicle
- h. Additional comments:

2. *Drivers and Mechanics:*

- a. All vehicles have assigned drivers
- b. All vehicles have assigned assistant drivers
- c. Driver and Mechanic Awards are issued
- d. Motor Officer holds motor personnel periodically to review new directions, practices, etc.
- e. Additional comments:

MAINTENANCE RECORDS

1. *Preventive Maintenance Roster, WD AGO Form 460:*

- a. Services are pre-scheduled in pencil each month
- b. Roster is posted up-to-date
- c. Monthly and semi-annual services are properly distributed throughout month
- d. Services done on other than scheduled date are circled
- e. Auxiliary engines and trailers are entered properly
- f. Unauthorized symbols or abbreviations not used
- g. Maintenance service up-to-date
- h. Additional comments:

2. *PM Service and Technical Inspection Work Sheet, DA AGO Form 461 and DA AGO Form 462:*

- a. Properly posted with non-applicable services lined out
- b. Properly signed (Mechanic & Motor Officer)

- c. Remarks indicate only deficiencies not correctible during service
- d. Mandatory services are circled
- e. Initial and final road test properly indicated
- f. For vehicles with assigned trailers, trailer serial number indicated and pertinent services performed
- g. Man-hours indicated properly
- h. WD Lubrication Order No. entered under "Remarks"
- i. Specific defects indicated by underlining applicable sub-assemblies
- j. Corrective action indicated for all deficiencies under "Remarks" to include requisition numbers and dates
- k. Filed in current work file if deficiencies not corrected
- l. Additional comments:

3. *Vehicles and Equipment Operational Record, NME 110:*

- a. Official user has indicated mileage at which vehicle was released and has properly signed tickets
- b. Signature of driver
- c. Signature of dispatcher (twice)
- d. Driver has indicated mileage of each stop
- e. Deficiencies initialed and those not immediately correctible posted to current work file
- f. Ticket retained on file for required period
- g. DA Lubrication Order No. and date entered
- h. Additional comments:

4. *Daily Dispatching Record of Motor Vehicles, DA AGO Form 9-75:*

- a. Properly filled out by dispatcher to include notation in accident column
- b. All vehicles dispatched are checked in under "IN" column or accounted for under remarks at end of each day
- c. Retained on file for required period

d. Additional comments: _____

5. *Motor Vehicle Operator's Permits, DA AGO Form 9-74:*

a. Properly made out _____
b. In driver's possession _____
c. Additional comments: _____

6. *General:*

a. No forms other than those authorized by
TM 37-2810, TM 38-660, or AR 700-105
are in use _____
b. Request for Job Order, WD AGO Form
9-76 is in use _____
c. Additional comments: _____

GLOSSARY

The following are terms commonly used in ordnance maintenance and supply operation. For additional definitions, see SR 320-5-1, "Dictionary of United States Army Terms."

1. *Combat loading*—The stocking of combat vehicles with essential battle equipment, supplies, rations, etc., so that they are ready to go into action.

2. *Maintenance*—Any action taken to keep matériel in a serviceable condition or to restore it to serviceability when it is unserviceable. Thus, maintenance of matériel includes inspecting, testing, servicing, classifying as to serviceability, repair, rebuild, and reclamation.

3. *Medium maintenance*—Maintenance normally performed by mobile ordnance maintenance units, and includes the repair of major items for return to using organizations as well as the reclamation of unserviceable assemblies, subassemblies, and parts, either generated during the repair operations or turned in for exchange by using organizations. Synonymous with third echelon.

4. *Heavy maintenance*—Maintenance normally performed by semi-mobile or permanent shop type ordnance maintenance units, and includes repairs and overflow work evacuated by direct support or mobile ordnance units as well as the repair of major items for return to utility stock, and the reconditioning of assemblies, subassemblies, and parts, either generated during repair operations or received from ordnance collecting points. Synonymous with fourth echelon.

5. *Rebuild*—To restore to a condition comparable to new by disassembling the item to determine the condition of each of its component parts, and reassembling it using serviceable, rebuilt, or new assemblies, subassemblies, and parts. Synonymous with "overhaul," "overhaul and rebuild," and "recondition."

6. *Regulated item*—An item which is scarce, costly, of a highly technical or hazardous nature, or which, for some other reason must be controlled closely during and after distribution.

7. *Repair*—To restore that which is unserviceable to a serviceable condition by adjusting or replacing damaged or unserviceable parts, components, or assemblies.

8. *Replace*—The substitution of serviceable assemblies, subassemblies, and parts for unserviceable components.

9. *Returned ordnance matériel*—Unidentified and/or unclassified ordnance matériel, or captured enemy matériel of similar types, received by collecting points, maintenance shops or supply depots as the result of battlefield recovery operations, or turned in by using organizations.

10. *Service*—To inspect an item of ordnance equipment before, during, and after operations, and at other scheduled times: to verify its serviceability, detect incipient mechanical failures and take corrective measures. Normally includes cleaning, adjustment, preservation, and replenishment of fuel and lubricants.

11. *Utility stock*—A reserve of major items authorized major commands in the field, and installations, for the purpose of expediting the replacement of unserviceable major items by like serviceable items when repairs would otherwise be unduly delayed.

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